MODERN PACKAGING

DECEMBER 1942

Six metal containers dropped into the night

AS THE BOMBING PLANE roared over its objective, six parachute flares were dropped into the night.

Seconds later the target below stood forth . . . bathed in brilliant light.

Great quantities of these flares are required to assure accurate bombing. *And each one is packed in a sturdy metal container.* Parachute flares are merely one example of Canco containers in actual combat . . . another reason why many of you must do without metal containers now.

Other examples include:

Fuse Containers—*hermetically sealed key-opening cans to protect delicate fuses until they are ready for use.*

Emergency Water Containers—*for supplying sterile water used in washing and irrigating wounds.*

Portable Blood Bank Containers—*they protect blood-plasma kits to be used in giving life-saving transfusions in the field.*

Anti-Aircraft Gun Motor Containers—*especially designed to protect delicate motors when not in use.*

Metal First Aid Kits—*hermetically sealed against bacteria and poison gas.*

And numerous others.

We are also producing tremendous quantities of containers for essential foods for the armed forces . . . for the home front, too.

In addition, American Can Company machine shops are devoting a large part of their facilities to the production of specified tools and weapons of war.

These are a few of the reasons why metal containers are not available for some products today . . . reasons why many of you have been forced to adopt substitute packages for the duration.

We are fully aware of the problems you face and are doing everything possible to perfect the manufacture of substitute containers from available materials. Our research efforts are being redoubled to make such containers available for many products in the near future.

American Can Company
230 Park Avenue, New York

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122 EAST 42nd STREET,
NEW YORK, N. Y.

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Please put in my order now for.....copies of the huge 1943 PACKAGING CATALOG at NEW LOW PRICE OF $2.50 PER COPY.

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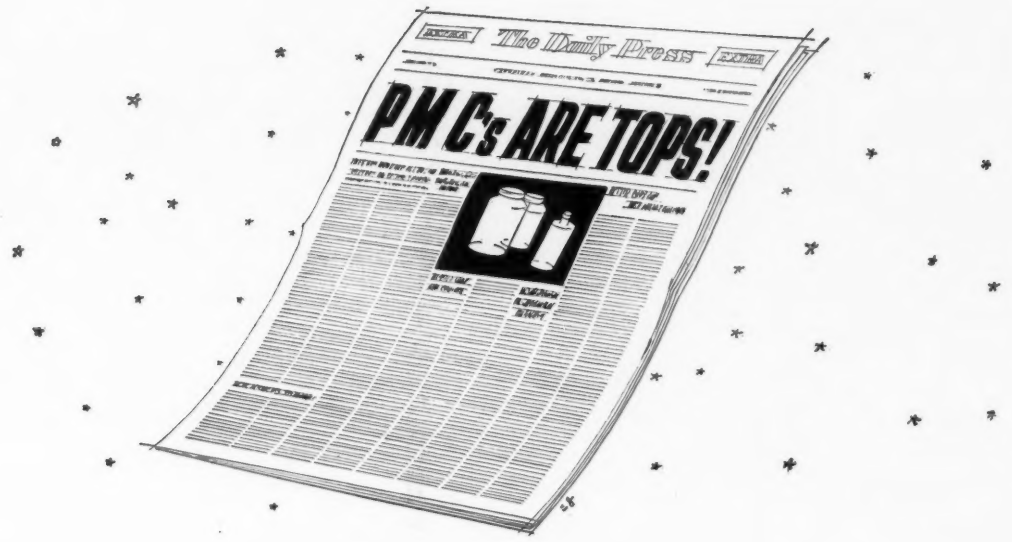

TOP LINES

"TOP" is a favorite headline word. It is short, to the point, easily understood. "Dewey Elected N. Y. *Top* Executive" . . . "Notre Dame *Tops* Navy" . . . "Ceilings Prevent *Top* Prices" . . . "Scratch One Flat *Top!*"

Pick up your morning paper. You will find many similar captions. For *top* fits into the vocabulary and spirit of the day. It expresses our feelings, our hopes, our ambitions . . . albeit a bit slangily. And it does it better, *much* better, than many a high-sounding word of multiple syllables.

No word in the colorful argot of newspaper columnist, sports fan or man-on-the-street has greater acceptance or wider application than this simple little word of three letters. It is as American as skyscrapers and baseball; life, liberty and the pursuit of happiness.

And so we add a headline (or rather, a footnote) of our own: "Phoenix Metal Caps are *Tops* for Foods, Drugs, Cosmetics, Chemicals, Wines and Liquors." Or, to reduce it to newspaper column width, perhaps we should just say: "P M C's are *Tops*!"

PHOENIX METAL CAP CO.

2444 West Sixteenth Street
CHICAGO

3720 Fourteenth Avenue
BROOKLYN

CHARLES A. BRESKIN, Publisher
CHRISTOPHER W. BROWNE, Editor
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IRIS VINTON, Associate Editor
NICHOLAS HUPALO, Art Director

Modern Packaging

DECEMBER 1942
VOLUME 16 NUMBER 4

JANUARY

1942 has been a momentous year. Scarcely an industry has escaped without some packaging change. And these are only the beginning of what's in store for 1943. That's why we say—"Look in Both Directions." Look at the achievements of 1942 to plan for what's likely to come in 1943. You will find all this reviewed in January Modern Packaging.

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"Out Of Darkness Shall
Come Dawn–
Out Of Winter Shall
Come Spring–
Out Of Striving Shall
Come Peace"

☆

From Our Combined Efforts
Shall Come Victory

SYLVANIA INDUSTRIAL CORPORATION
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Food Protection Papers

KALAMAZOO VEGETABLE PARCHMENT COMPANY

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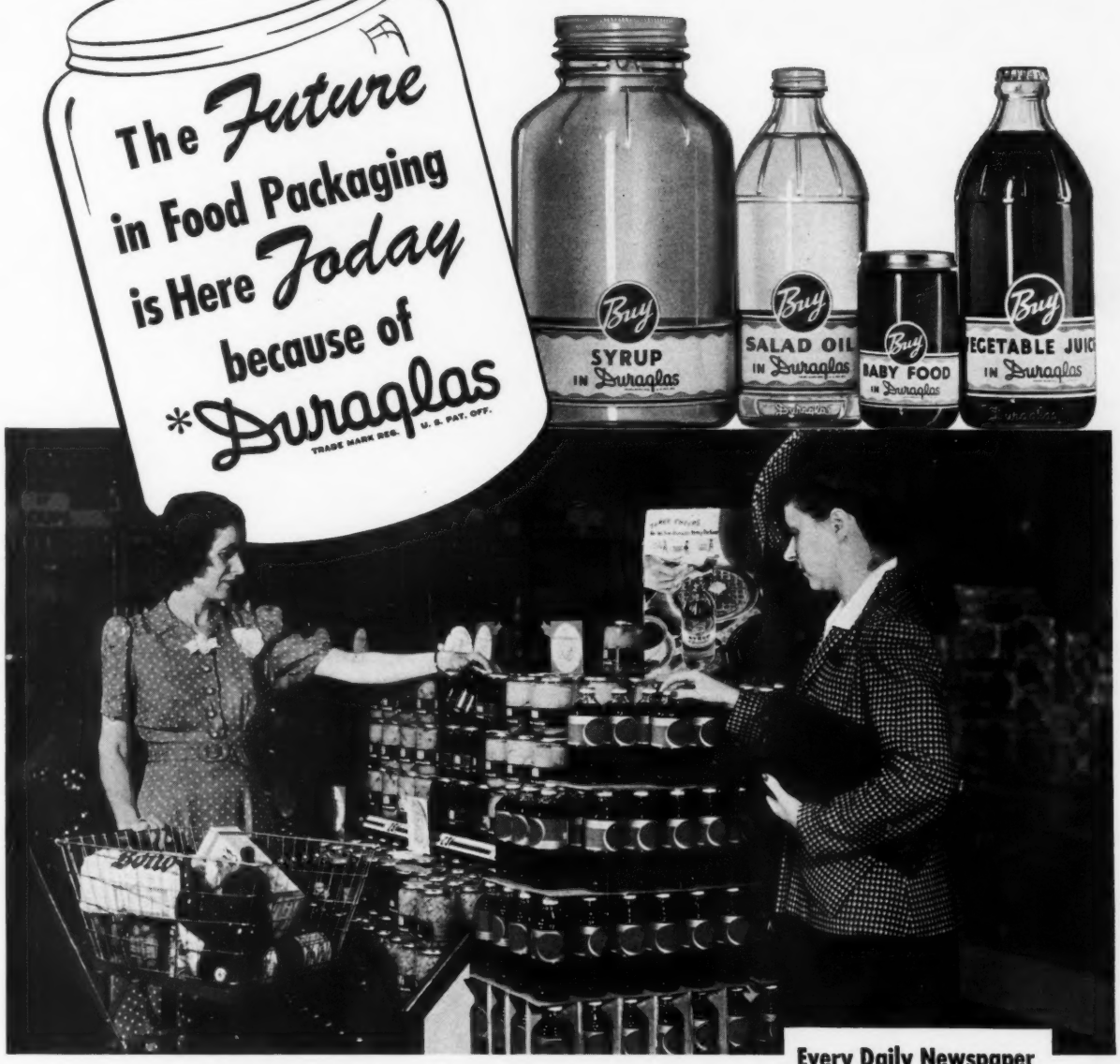
The Future in Food Packaging is Here Today because of *Duraglas

TRADE MARK REG. U. S. PAT. OFF.



You saw it start years ago—the trend to glass packages for a greater variety and greater volume of food products.

In your planning for the future, you can bank on glassed foods continuing to grow in popularity. For women have found that the package that lets them *see* is an aid in shopping. They have learned in their own kitchens about the convenience of glass packages. Shopping habits formed today will set the pattern of tomorrow.

Two of the big factors in the swing to glass are Duraglas containers and Duraglas advertising. The Duraglas technique brought practical, economical glass containers... strong but lightweight. Duraglas advertising in national magazines has done its part in assuring permanent preference for this modern way to shop.

Owens-Illinois Glass Co., Toledo.

Every Daily Newspaper Offers Grocers Duraglas Cuts

All newspapers now have a complete retail-grocer cut service of Duraglas headings and containers for local advertising. You'll see them in grocer's ads soon—more evidence of the permanent place of glassed foods in food merchandising.

OWENS-ILLINOIS GLASS COMPANY TOLEDO, OHIO

DEVELOPERS OF *Duraglas — THE IMPROVED TECHNIQUE IN GLASSMAKING

Shown are standard molded Beetle closures in 28 mm. and 38 mm. sizes for the wine and liquor industry.

Closures need not be a bottleneck!

Are you losing precious time experimenting with substitute closures for glass containers? Beetle*, no substitute but a highly practical closure material in wide use by the glass container industry, offers definite advantages.

Tasteless, odorless and chemically inert, this modern molded plastic is unaffected by wines and spirits. It is uniform, lustrous in color and economical in production. Beetle's light weight and durability, moreover, make it readily adaptable to high speed, mass packaging methods.

Black and Brown closures of Beetle are offered at even lower cost to replace strategic materials—formerly used solely for reasons of economy—which are no longer available. If you have a closure problem that might be solved with Beetle, your inquiry will receive immediate attention.

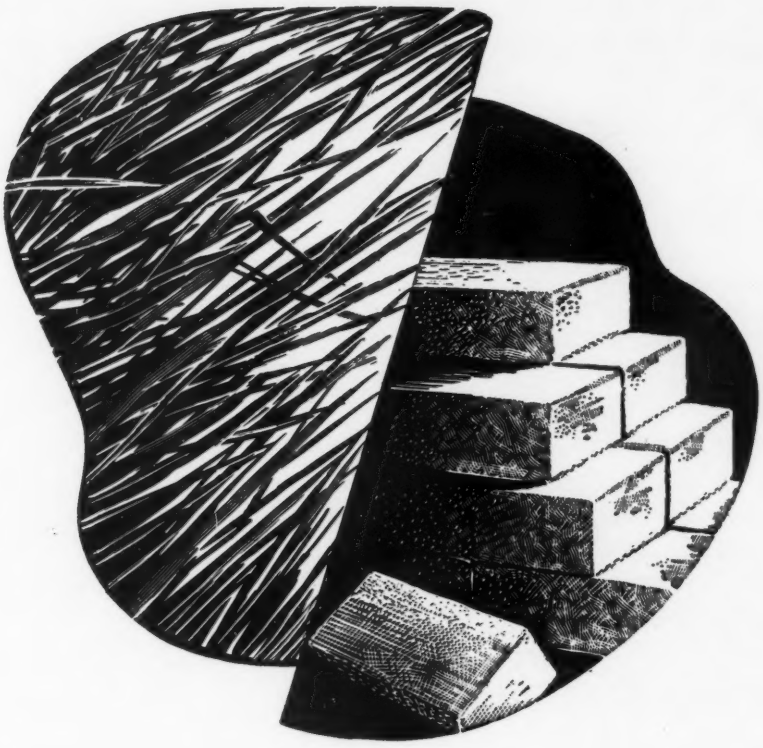
AMERICAN CYANAMID COMPANY

PLASTICS DIVISION

34 ROCKEFELLER PLAZA • NEW YORK, N. Y.

*Reg. U. S. Pat. Off.

Beetle A CYANAMID PLASTIC



MAKING BRICKS WITHOUT STRAW

The old adage said, "You can't make bricks without straw"... but it is being done today... and so are lots of other things that once seemed impossible. In the packaging industry, a few may have been obliged to set the clock back a little... but for the great majority, new discoveries have provided "bricks without straw" that are better than ever and that will continue to be used long after the war is over.

Every day these new wartime problems are being encountered... and every day the Riegel Mills are being called upon to assist in their solution ... with Paper. Our work along such lines is not a sudden desire for "essential" business, but the continuation of many years as a leading producer and specialist in protective packaging.

The sale of a few of our papers is now limited... on most of them it is not ... but in either event, we believe our technical research and practical experience will enable us to help you. Write us your requirements now.

RIEGEL PAPER CORPORATION

342 MADISON AVENUE • NEW YORK, N. Y.

75

What kind of Paper

would you use for wrapping lard?

● That's an easy question for a man in the lard business.

He has known the answer for years. It's a paper that will do three things: withstand *grease,* withstand *water,* retard *rancidity.*

But if you're in some other business —all this might never occur to you.

And that's where we come in.

We know quite a bit about what paper can do and must do under many situations.

We also know quite a bit about making paper that meets odd specifications, because we've been making a thousand miles of paper a day.

So if you have something to package—why not put your problem up to us?

Maybe we already have the paper you want. Maybe we'll have to develop it. Maybe it can't be done.

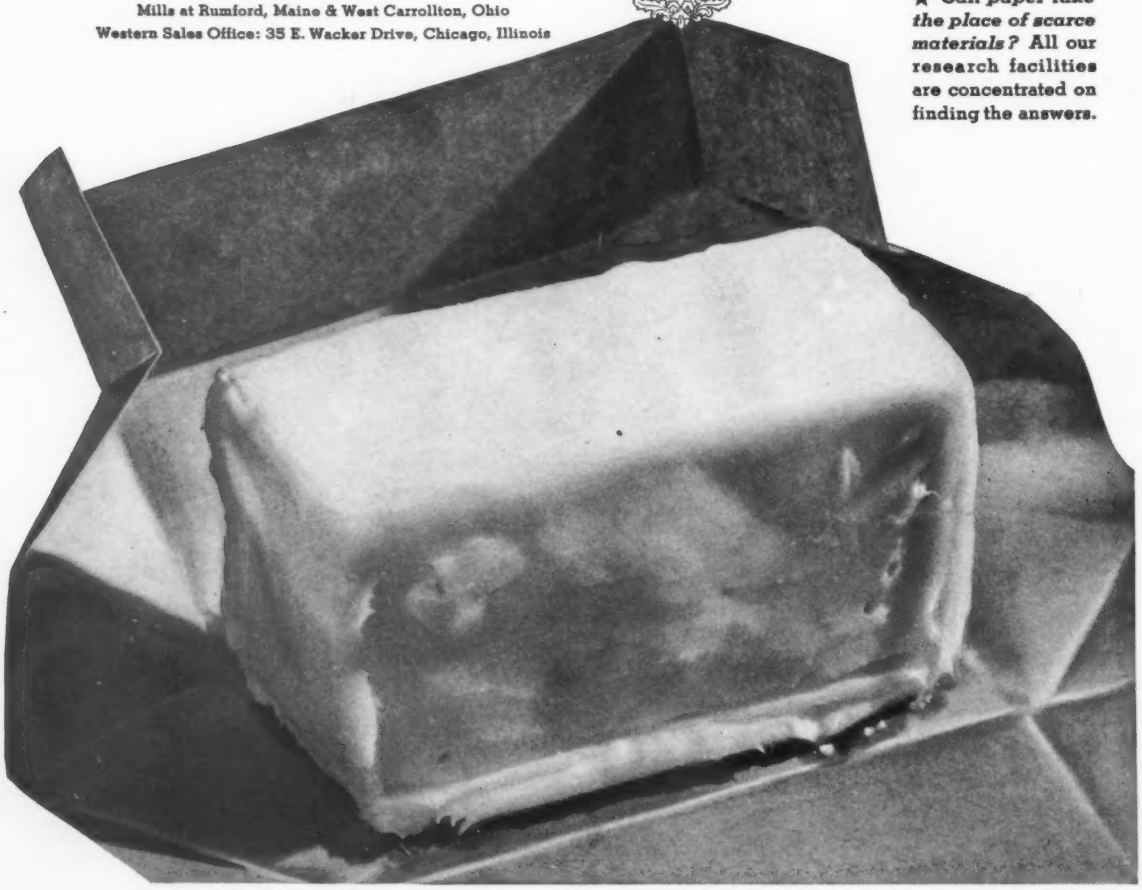
But in any case, we offer the resourceful thinking that's needed to find such things out.

Why not write us a letter and see what we can do?

Oxford Paper Company

230 Park Avenue, New York, N.Y.
Mills at Rumford, Maine & West Carrollton, Ohio
Western Sales Office: 35 E. Wacker Drive, Chicago, Illinois

★ ***Can paper take the place of scarce materials?*** **All our research facilities are concentrated on finding the answers.**



"You'll have to come to it sooner or later, Melvin."

V-6/6/39 *Drawn for Division of Information, OEM.*

YOU'LL HAVE TO COME TO IT SOONER OR LATER · · · WHY NOT NOW?

IT LOOKS · · · FEELS · · · HANDLES · · · LIKE ALUMINUM FOIL

Examine carefully the perfect metallic finish of our material. It can replace your aluminum foil or composition foil or tin foil wrapper no longer available.

It is non toxic
It can be made waterproof
It can be made heat sealing
It can be made grease resisting

You doubt it? . . . . . well, write us for samples and information. We will be glad to tell you all about it and solve your packaging problems.

KELLER-DORIAN CORPORATION 516 W. 34th St., N. Y. C.

HOLDER OF THE COVETED TREASURY FLAG

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▶ **TODAY** when Conservation is vital to the nation's war program, small "Cel-O-Seal" bands make an important contribution. On wine, drug and medicinal packages, they secure closures firmly in place; hence—

1. **Keep the product in, safe from evaporation, and**
2. **Keep destructive or harmful influences out.**

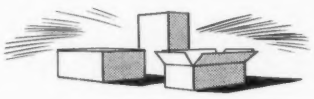
"Cel-O-Seal" also "tops off" glass packages attractively, provides individuality—and often a "second label"—for the bottle or jar that wears it.

One critical war material
SALES REPRESENTATIVES IN PRINCIPAL CITIES:

# of which there's no shortage

AS the war goes on, it is becoming an increasingly *vital* material. Fortunately, it is also becoming a more *plentiful* material.

It is *ingenuity*. Yankee ingenuity. The kind of ingenuity that has helped American industry do the "impossible" in an impossibly short period of time.



It's the kind of ingenuity you've seen in the paperboard and carton industry. Ingenuity that has helped make it possible to ship as much food in *one* hold as formerly required *ten*—through the development of protective cartons for dehydrated foods. Ingenuity that has devised special paper boards and containers in which to send ammunition, medical supplies and ordnance parts to far-flung battle-fronts, with far greater safety and convenience.

It's the kind of ingenuity, too, that is helping many a manufacturer convert from containers of critical materials, no longer available, to non-critical materials. The kind of ingenuity which has developed a new, money-saving coated board, produced in one continuous operation, at an almost unbelievable speed . . . that has brought about new accuracy and precision engineering in folding cartons to reduce spoilage and jam-ups in filling machines.

In the research laboratories of Gardner-Richardson, as well as in those throughout the industry, the skill and knowledge . . . and ingenuity . . . of carton and paperboard engineers . . . continues at work to solve today's problems. And tomorrow's.

The GARDNER-RICHARDSON Co.

MIDDLETOWN, OHIO

Manufacturers of Folding Cartons and Boxboard

PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT

GARDNER-RICHARDSON FROM PULP TO FINISHED PRODUCT ENGINEERED PRECISION

Built to "take it"—

—and to deliver the goods as well!

WAR-TIME DEVELOPMENTS

indicate Peace-Time Trends...

Every advance made by Industry in achieving supremacy over enemies of America will provide improved facilities when Victory is won. Airliners carrying urgently needed supplies, point toward an era of flying freight; great, winged "containers" of *your* merchandise. . . .

Similarly, the advances made in CELLUPLASTIC will mean even wider usage for Celluplastic Containers after the war. Inherently *shatterproof*, colorful, opaque or transparent, their surprising lack of weight affords worthwhile savings in transportation costs.

Inquiries on Containers and Specialties for War Essentials are given immediate attention. So keep CELLUPLASTIC in mind—it *replaces* metals effectively!

FIRST IN CELLUPLASTICS
HYCOLOID - CLEARSITE

American bombers of the type shown have been doing splendid work over Japan, Germany, Africa and the Southwest Pacific. Despite ground or aerial opposition, they rarely fail to deliver their cargo.

CELLUPLASTIC CORPORATION

50 Avenue L, Newark, N. J.

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Points out packaging short cuts. Shows how to cut time in storing, sealing, packing, stacking, loading corrugated shipping boxes. Suggestions are particularly valuable in packing war materials where time saving is vitally important.

Handy reference book. No matter what operation he performs, every man in your shipping department should read this book. He'll do a better job because of it.

Send for several copies. Be sure to ask for enough additional copies to supply all people interested. There is no obligation.

Write today. If you have a specific packaging problem, turn it over to the H & D Packaging Laboratory. There is no charge for Package Laboratory service.

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THE 1943 Packaging Catalog will be the first to be *completely sold.* Every copy will be bought by a company or individual needing it. There will be absolutely no complimentary distribution as in former years.

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The 1943 Packaging Catalog is the new edition, now in preparation, of packaging's only handbook, sourcebook and guidebook. For 1943, it is being re-written, re-checked and re-edited by literally thousands of experts in the specialized branches of packaging. The 1943 edition will be, in every sense of the word, a "war" edition of the Packaging Catalog.

NEW ARTICLES, NEW SECTIONS

The 1943 Packaging Catalog will be a complete break with the past. It will be different, basically different than any Packaging Catalog that has ever appeared. All information regarding packages and packaging materials and packaging equipment which is no longer available, will be omitted. Replacing it will be the information on substitute materials—and only those substitute materials which have been tested, can be used, and are available. In those cases where strategic materials are still available to firms holding the necessary priorities, there will be articles about these items, but they will be completely revised and re-illustrated to encompass the new roles and new uses.

It is a one-volume encyclopedia, in the finest sense of the word, giving the basic information which every packaging executive and technician must have; information which no one man can encompass and which, in book form, is readily referable. The Packaging Catalog is a handsome book, well printed and legible. Overall size: 9″ x 12″. Pages: more than 500. Case-bound.

Price: $2.50

(formerly $5.00)

PACKAGING CATALOG CORPORATION

122 EAST 42nd STREET **NEW YORK CITY**

Fitchburg

Truly Level Base Stock Papers

The absolutely level surface required of converting papers can be obtained the natural way—*while paper is on the machine.* If attempted by after-processing, essential paper formula properties and characteristics are either impaired or destroyed.

Formula and surface must not "fight" one another. Both are essential to the converter's super-finishing processes, to precision applications of multiple superimpositions of various substances and materials, and to pre-determined paper uses.

The *truly level* process distinctive to Fitchburg Truly Level Base Stock Papers *is* obtained *while paper is on the machine.* No *artificial* after-processing can equal this *natural* process. There is no short cut—no substitute for experience, skill and care.

***Truly level* foundation papers possess an impressive record of achievement. In this war time economy, self-preservation dictates that you call in a Fitchburg representative to discuss the application of *truly level* to your product or paper need.**

THESE FITCHBURG SPECIALTY PAPERS ARE TRULY LEVEL PROCESSED:

ALKALI PROOF PAPERS
for soap, chemicals, dyes, etc., or wherever an alkali condition exists

BOX WRAP
including Snowhite-Stiktite, an exclusive Fitchburg development

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with the strength and surface qualities for your particular needs

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with a surface specially adapted to lacquer applications

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and Combining Papers, both free and groundwood, for board mills and box makers

FOIL MOUNTING PAPERS
developed after years of research

PYROXYLIN PAPERS
High super finishes to secure best results with minimum of coating solution

Fitchburg Paper Company

250 PARK AVENUE, NEW YORK CITY Mills: FITCHBURG, MASSACHUSETTS 11 SOUTH LASALLE STREET, CHICAGO

Why do bees air out their package every day?

DID you know that bees do a "fan dance" standing still? They do it every day, to air condition the package they live in—the beehive.

A beehive bulges with busy bees. Where there's such a crowd, the air soon would grow stale—workers soon would get groggy. Packaging problem: to keep the air fresh. The bees have solved *that* one.

Certain bees have just one job—to act as fanners. They stand perfectly still all day, ceaselessly beating their wings. This fanning forces stale air out of the hive, makes currents of clean, fresh air flow in. The air movement, too, helps evaporate water from the honey and make it purer and "riper."

Bees made their package successful. They had to do it themselves. Modern business men are luckier. They come to Continental, packaging headquarters for industry. Today, however, war efforts come first.

The experience and resources of Continental are now enlisted in helping the nation. Besides millions of food containers for civilian America, for our fighting forces, and for our Allies, we are producing other packages to protect America.

Anticipating another day, we see many new applications of the things we are learning and doing now. If you are looking ahead or developing an idea, we'll be glad to help you. Our packaging engineers, research men and designers are at your service at all times.

CONTINENTAL CAN COMPANY

Packaging Headquarters for Industry

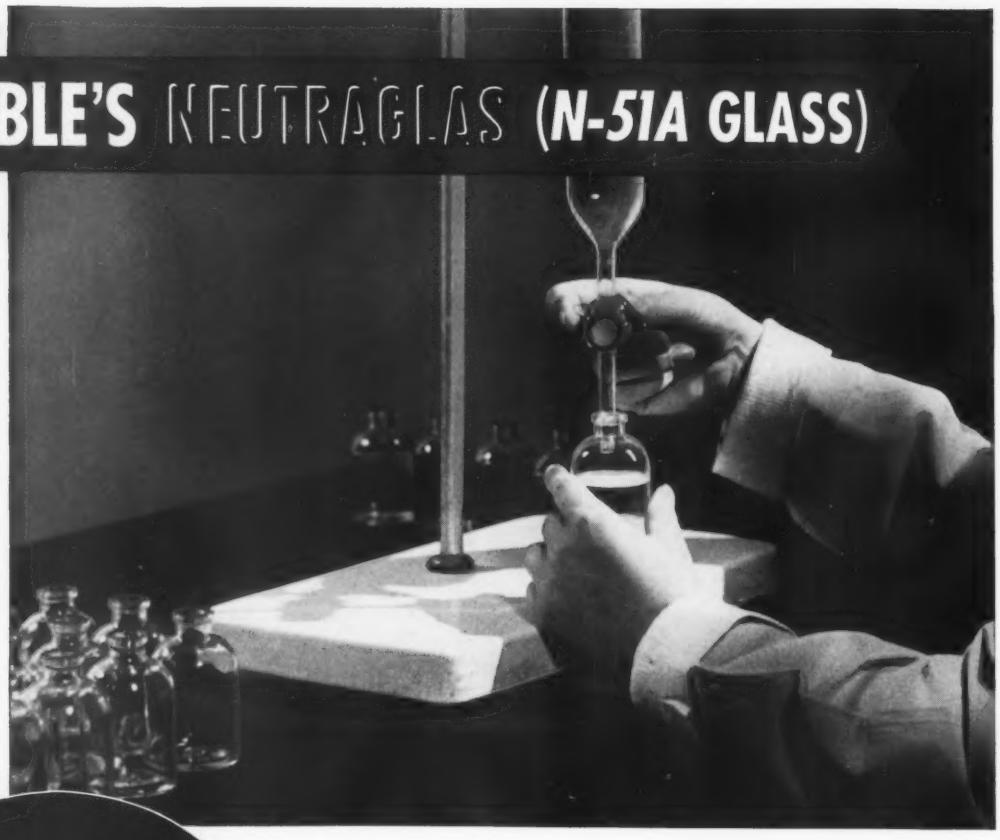
What will be the PACKAGE of the FUTURE?

The package of the future will be the package that best meets *all* these 10 important points:

1. Protects against light, heat, and dirt.
2. Does not chip, break, or tear.
3. Is adaptable to *highest* speed filling operations.
4. Is economical to pack, ship, and handle.
5. Light weight, compact, no waste space.
6. Moisture and vapor proof, impervious to temperature changes.
7. Easy and convenient to display, sell.
8. Available in wide variety of sizes, shapes, styles (over 500).
9. Offers maximum convenience and safety in consumer usage.
10. Permits high processing temperatures, certain hermetic sealing.

These points made the metal container *first* in packaging. If there ever is another package that has *all* these qualifications, we'll be making it!

KIMBLE'S NEUTRAGLAS (N-51A GLASS)



Standardize NOW on Kimble Ampuls, Serum Vials, Serum Bottles and Clinical Glass Containers made of NEUTRAGLAS (N-51A Glass) — CLINICALLY SAFE.

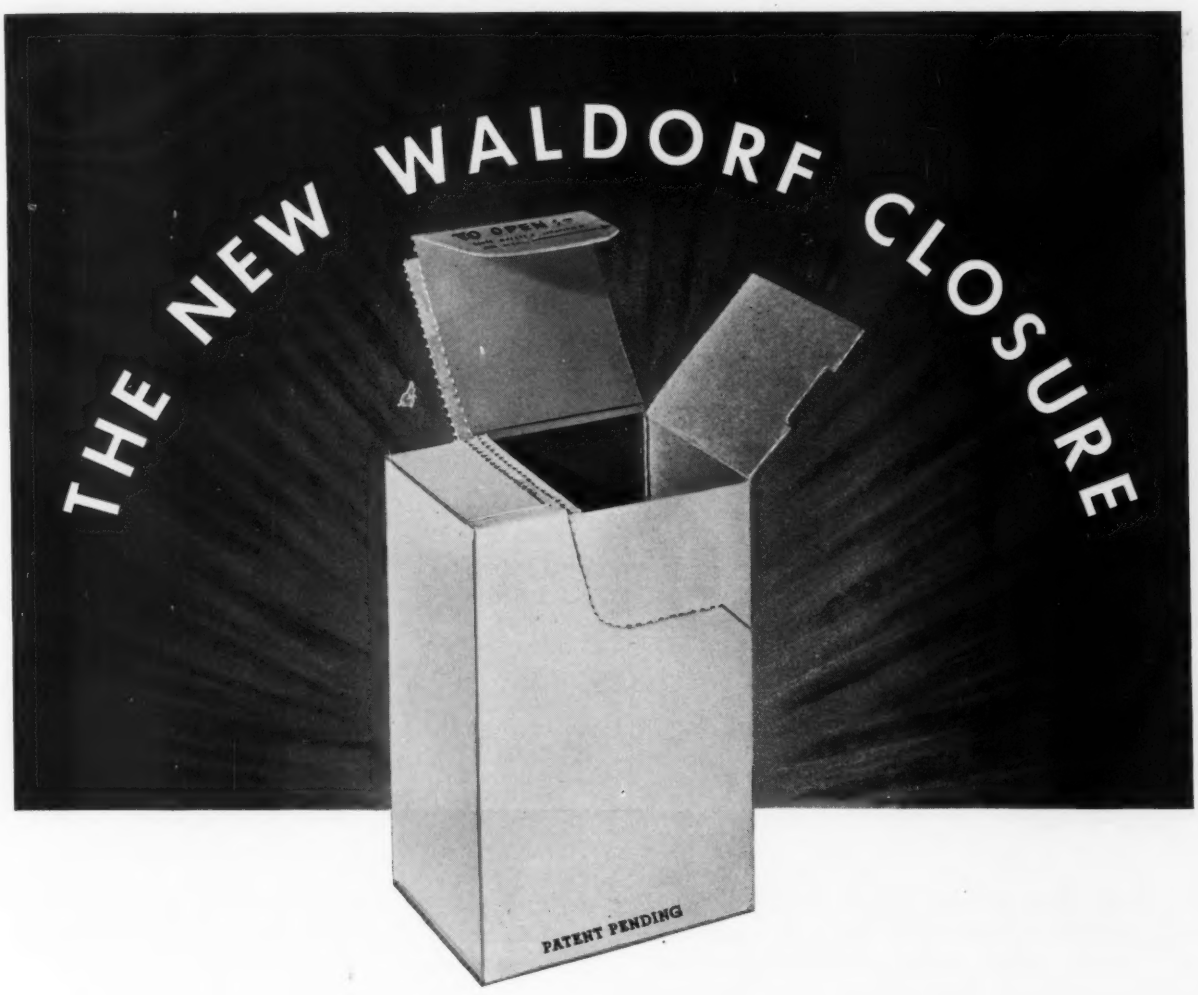
The manufacturer who takes scrupulous pains in preparing a parenteral solution is equally concerned to protect it until the moment of use. He requires a container which will not impair the quality he has created in his product.

Kimble NEUTRAGLAS—being highly resistant to solvent action and chemical attack—protects to the utmost the quality, potency and pH value of any product packaged in it.

• • • *The Visible Guarantee of Invisible Quality* • • •

KIMBLE GLASS COMPANY • • • • VINELAND, N. J.

NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO



This easily opened . . . readily reclosed package is the product of Waldorf research. Permission to its free use has been granted on government items. To this package we proudly affix the label of . . .

WALDORF PAPER PRODUCTS COMPANY
SAINT PAUL, MINNESOTA

"WHOSE BUSINESS IS THE DEVELOPMENT AND PRODUCTION OF GOOD PACKAGING"

* Sanitape-Sealtite

TODAY we are producing packages which are not only satisfactory from the usual point of view, but actually meet more stringent specifications than were ever prescribed in normal times. We call your particular attention to military packages shown below.

As a result of our years of specializing in the making of those unique packages produced by Sanitape-Sealtite method, we are able in these crucial times to give unusual aid to concerns who might otherwise be faced with grave difficulties in packaging their products.

We can make many packages which do not require materials on priority lists. The range of the products which we can handle is almost limitless. The styles, sizes, and kinds of package which can be developed to meet particular requirements are so endlessly varied as to assure complete satisfaction.

3 NEW PACKAGES FOR THE ARMED FORCES

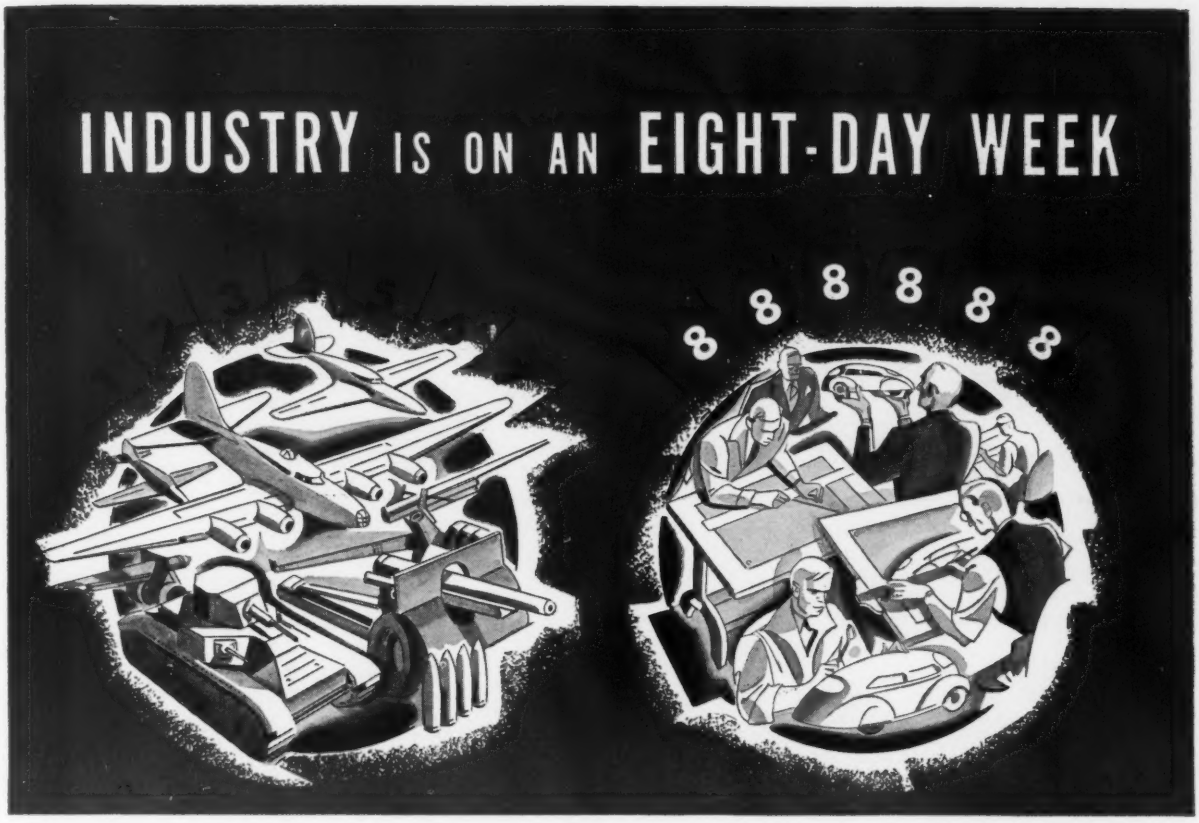
We are accustomed to meeting such unusual specifications as (a) submergence for from four to twelve hours, (b) ability to withstand unusual breakage tests, (c) the requirement that package be vermin proof as well as that it assure cleanliness and maintenance of efficacy indefinitely. Packages above for the armed forces, containing vital dosage, satisfy all these requirements.

---

* Sanitape-Sealtite is a unique method for packaging pills, tablets, capsules, creams and powders, by which each unit or unit dose is sealed in its own air-tight compartment—assuring protection and maintained efficacy.

IVERS · LEE COMPANY · NEWARK · N · J

INDUSTRY IS ON AN EIGHT-DAY WEEK



Seven days a week America is doing one of the greatest jobs of production the world has ever known. We are living with one part of that job here at Alcoa, where over seventy thousand men and women are producing Aluminum in quantities that were mere fantasy yesterday.

But there's an eighth day tucked in among the few open spaces in the seven-day week. Engineers are able to squeeze in some important Imagineering about post-war products—planning that will help convert war jobs into peace jobs.

For instance:

Imagine what 1,000 pounds less weight in the automobile of the future would mean in performance, gas economy and tire life. Then engineer it down to the realization that 1,000 pounds *can* be taken off by using, say, 500 pounds of Aluminum per car.

Now translate possibilities such as these into your own business.

Aluminum costs less today. New methods, techniques, processes, and new forms of metal coming out of the war effort will all be available for the as-yet-untold possibilities in tomorrow's peacetime products and peacetime services.

Our eighth day is devoted to helping Imagineers throughout industry use the potentialities of Alcoa Aluminum in bettering the new ideas they are dreaming up. ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA ALUMINUM

It is simply a rigid set-up paper box, like hundreds you've seen. Yet today it is helping to save men's lives . . . packaging and protecting vital units of blood plasma on their way to battle fronts.

• • •

Yes, millions of set-up paper boxes are today serving the nation. Because the set-up box is rigid, ready-to-use, it reduces packaging costs by reducing packaging time. And these sturdy boxes give added protection to vital products in transit. They have always meant *quicker* moving at the Point of Sale. Today they mean *safer* moving to the important Point of Use.

The Master Craftsmen of the Set-Up Paper Box Industry are specialists in creating packages to solve special packaging problems . . . for peace-time as well as war-time products. Do you want to build more sales appeal into your package? Do you want to reduce your overall costs of packaging? Do you want to know what materials are quickly available for packaging under present day conditions? The companies listed here are those which feature the seal of the Master Craftsmen of the Set-Up Paper Box Industry. You will be under no obligation in consulting them about your packaging plans.

Copyright 1942, Master Craftsmen

Master Craftsmen of the SET-UP PAPER BOX INDUSTRY
ROOM 1106, LIBERTY TRUST BUILDING, PHILADELPHIA, PA.

SET-UP PAPER BOXES EXCEL IN SALES APPEAL

SOME PRODUCTS, TOO, ARE WALLFLOWERS

Many a girl who can waltz to perfection is still a wallflower. And many a commercial product "sits it out" on dealers' shelves while other competing products are in brisk demand. And call it sex-appeal, call it eye-appeal, call it what you will, it's often a matter of appearance . . . a matter of "packaging."

Saleswise manufacturers have been quick to realize that packaging is no longer merely a matter of buying boxes. Successful packaging means "custom tailoring" for your product . . . creating, specifically for your product, exactly the right dress.

If you have a problem in packaging, why not consult one of the Master Craftsmen listed below?

Set-up paper boxes are still available. There is no shortage of paper board and cover-paper stocks are in adequate supply.

Master Craftsmen

SET-UP PAPER BOXES EXCEL IN SALES APPEAL

BALTIMORE, MD.
Maryland Paper Box Co.

BOSTON, MASS.
Bicknell & Fuller Paper Box Co.

BROOKLYN, N. Y.
Specialty Paper Box Co.
E. J. Trum Co., Inc.

BUFFALO, N. Y.
Thoma Paper Box Co.

CHATTANOOGA, TENN.
Atlas Paper Box Co.

CHICAGO, ILL.
Kroeck Paper Box Co.

COLUMBUS, OHIO
Columbus Paper Box Co.

DANVERS, MASS.
Friend Paper Box Co.

DETROIT, MICH.
Stecker Paper Box Co.

HARRISBURG, PA.
The McClintock Corp.

KANSAS CITY, MO.
Crook Paper Box Co.

LOUISVILLE, KY.
Finger Paper Box Co.
Kentucky Paper Box Co.

MERIDEN, CONN.
Shaw Paper Box Co.

NASHVILLE, TENN.
American Tri-State Paper Box Co.

NEWARK, N. J.
Mooney & Mooney
Newark Paper Box Co.

NEW YORK, N. Y.
A. Dorfman Co., Inc.

PAWTUCKET, R. I.
Shaw Paper Box Co.

PHILADELPHIA, PA.
Datz Mfg. Co.
Walter P. Miller Co., Inc.
Royal Pioneer Paper Box Co.
Edwin J. Schoettle Co.
George H. Snyder, Inc.
Sprowles & Allen

PORTLAND, ME.
Casco Paper Box Co.

PROVIDENCE, R. I.
Hope Paper Box Co.
Taylor Paper Box Co.

SEATTLE, WASH.
Union Paper Box Mfg. Co.

SOMERVILLE, MASS.
Consolidated Paper Box Co.

ST. JOSEPH, MICH.
Williams Bros.

ST. LOUIS, MO.
Great Western Paper Box Co.
Moser Paper Box Co.
F. J. Schleicher Paper Box Co.
Service Paper Box Co.

UTICA, N. Y.
Utica Box Co., Inc.

WILMINGTON, DEL.
Wilmington Paper Box Co.

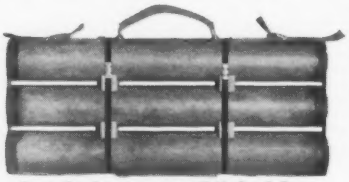
Cooperating Suppliers:

Appleton Coated Paper Company; Blackstone Glazed Paper Company; Louis Dejonge & Company; Globe Manufacturing Co.; Hampden Glazed Paper and Card Company; Hazen Paper Company; Holyoke Card and Paper Company; Holyoke Coated & Printed Paper Co.; Hughes and Hoffman; Lachman-Novasel Paper Company; Marvellum Company; Matthias Paper Corporation; McLaurin-Jones Company; Middlesex Products Corporation; Nashua Gummed and Coated Paper Company; Paper City Manufacturing Company, Inc.; Pejepscot Paper Co.; Plastic Coating Corp.; Racquette River Paper Company; Riegel Paper Corporation; Stokes and Smith Co.; Charles W. Williams & Co., Inc.

ACME STEELSTRAP PROCESS SAVES TIME, EFFORT FOR WOMEN OPERATORS

AMMUNITION CARRIERS SHIPPED SAFELY, SPEEDILY

Peacetime experience stood this wartime producer of mortar ammunition carriers in good stead. Recalling his damage-free experience with Acme Steelstrapped shipments, he



Acme Steelstrap meets all Federal Strapping Specifications. Here, two Acme Steelstraps make these ammunition tubes, "Bound to Get There."

called in an Acme representative for assistance in meeting packaging specifications, speedily. As a result, this important war product is reaching destination in perfect condition and *on time.*

As in many other war plants, women are successfully employed in the packing room . . . where they are establishing new speed and efficiency records with the simple, easy-to-use Acme tools. For instance, the Acme Steelstrapper eliminates unnecessary motion and excess fatigue . . . tensions, seals and cuts the strap with one stroke of two levers. Write, phone or wire for complete details.

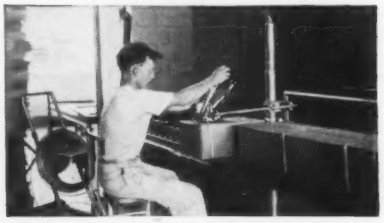
Women operators use sturdily built Acme stretchers to tension strap with little effort around ammunition tubes. The Acme Sealer forms the strong, secure joints to assure a safe journey for this important war product.

ACME *SilverStitchers* CONSERVE MAN-HOURS —AID WAR EFFORT

Acme Silverstitchers are assuring faster, easier box stitching in many war product plants. They are conserving man-hours and woman-hours too, as many plants are now using women employees for this important work.

Acme Silverstitchers are easy to use . . . sturdily built for constant and tough use . . . are made in all standard and many special types.

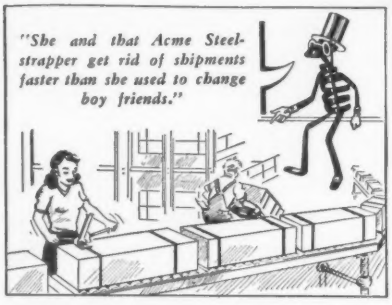
ACME STEELSTRAP KEEPS THEM MOVING ON THE PRODUCTION FRONT



LEND-LEASE— Acme Steelstrappers are used in canning plants for lend-lease shipments. Operators in this plant each average 183 strapped cases an hour! Close sailing dates are met on time.

CONSERVE MAN-POWER BY REDUCING ACCIDENTS

To halt the rising tide of accidents is the duty of every industrial organization and every industrial worker. To this end Acme Steel Company is participating in the nation-wide safety campaign — sponsored by the WAR PRODUCTION FUND TO CONSERVE MAN POWER.



SHIPPING HINTS CONTAINED IN NEW ACME PUBLICATION

Another issue of the popular Acme Process News has just been released. Well illustrated, it tells how war shipments are being made faster, safer and more economically. Mail coupon.

☐ Mail complete information on fast, safe and economical shipments of_____ *name of product* packed in_____ *type of container*

☐ Send me a copy of Acme Process News.

*Name*_____

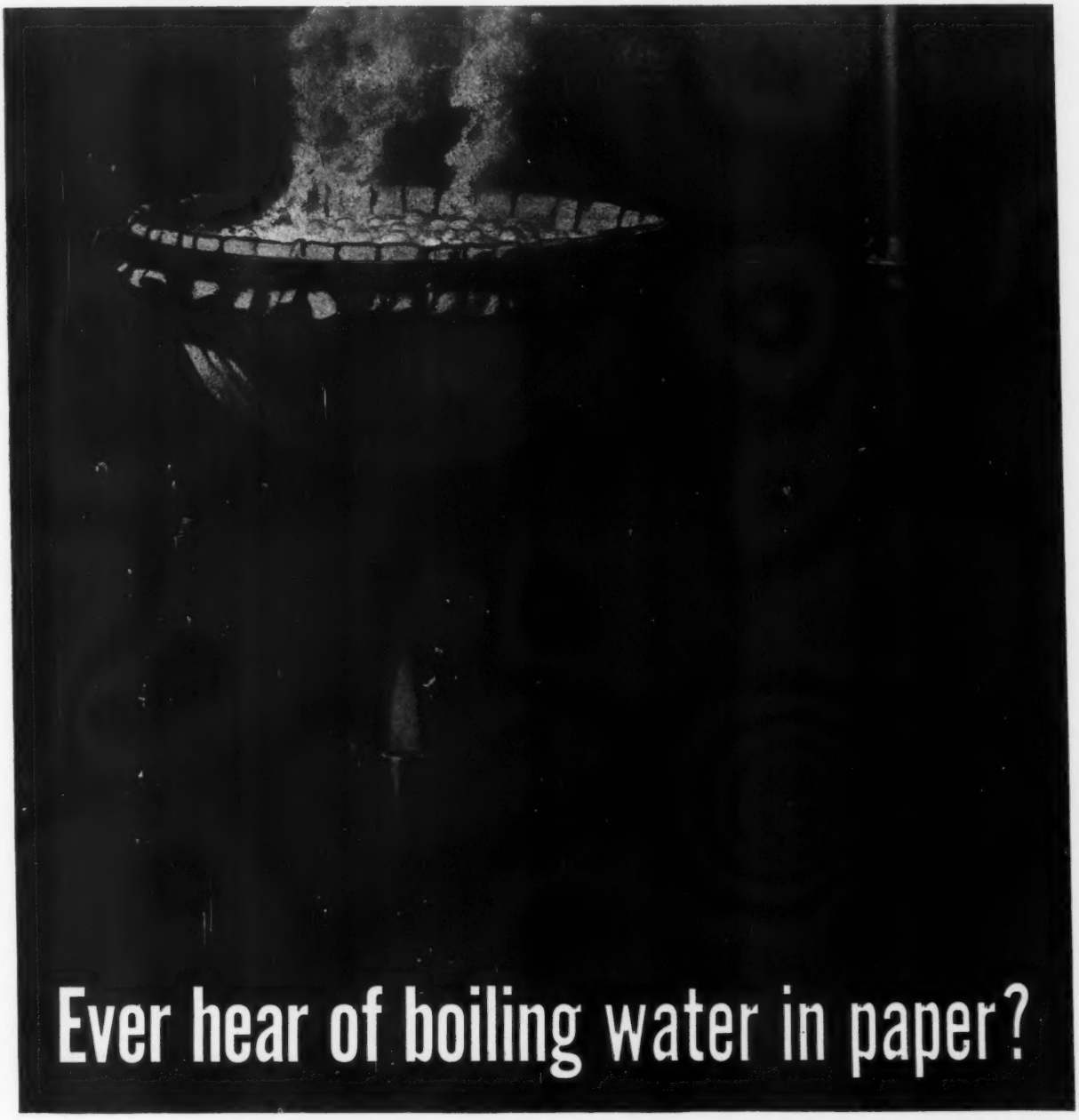
*Company*_____

*Address*_____

ACME STEEL COMPANY

2843 Archer Ave., Chicago, Ill.

MANUFACTURERS OF: STEELSTRAP, UNIT-LOAD BANDS, CORRUGATED FASTENERS, CARTON STITCHING WIRE, SILVERSTITCHERS, STRIP STEEL AND OTHER STEEL PRODUCTS.



Ever hear of boiling water in paper?

YES, in the research laboratories of Union Bag & Paper Corp. even that's been done! But manufacturers will have less interest in this experiment than in the fact that the South's abundant pulpwood supply is able to furnish kraft papers for thousands of uses...accomplish tasks once deemed impossible for paper to perform.

WITH MULTI-WALL CONSTRUCTION, Union Bag & Paper Corp. offers highly efficient methods of packaging and shipping agricultural, chemical, fertilizer, food and rock products...affords a decided weight and space-saving advantage.

IN THE FIELD OF WAR PACKAGING, Union Bag & Paper Corp. is able to make kraft papers resistant to oil, grease and water, super-strong, non-scuff, flavor-sealing, fold-enduring, and eye-appealing...is able to make kraft containers that have one, or ALL of these important advantages.

Whatever your wartime container or package problem... no matter how difficult it may seem...consult

UNION BAG & PAPER CORP.

WOOLWORTH BUILDING, NEW YORK, N. Y.

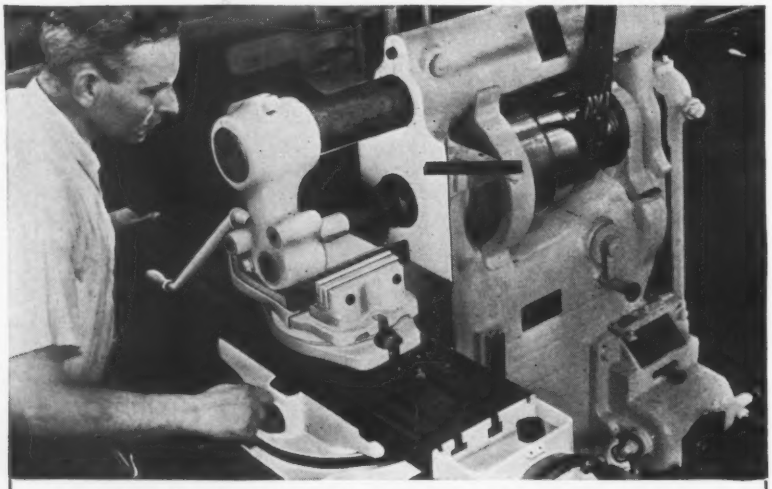
KRAFT PAPER—THE SERVICE UNIFORM OF AMERICAN PRODUCTS

INSIDE NEWS

DECEMBER PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1942

"Three-Dimensional-Seeing" Technique Developed by Du Pont

Light-Colored Machinery and Plant Interiors Cut Industrial Accident Rate



AFTER the body of the machine is painted with Horizon Gray and the working surfaces with a contrasting hue, such as Spotlight Buff, the "camouflage" is removed and the material being worked stands out in sharp contrast.

"Three-Dimensional Seeing," a technique of using color and light to improve vision of machine tool operations, was introduced a year ago. So rapidly did industry adopt the idea that a three-year research program conducted by the Philadelphia Electric and Du Pont Companies was continued indefinitely. Last month before the Illuminating Engineering Society latest research results were announced.

Since the new findings are an extension of the original "Three-Dimensional Seeing" idea, it is advisable first to describe briefly what the 1941 concept was, and what it aimed to accomplish.

Du Pont and Philadelphia Electric found from controlled tests under shop conditions that conventionally painted machinery provided a dangerous degree of camouflage. Dark finish coats absorb illumination instead of reflecting it. Material under fabrication blends into the dark mass of machinery, placing a heavy strain on workers' eyesight. The percentage of rejects was needlessly high. Danger points were all too inconspicuous.

Operator time-study and psychology test data were correlated with photometric readings of light reflected from machines painted in many combinations of bright, contrasting paint colors. It was recommended, as a result, that machines should be finished in light gray with working areas spotlighted with light buff.

Subsequent trial by industry bore out claims that this paint system reduced personal injuries, increased production, created more comfortable working conditions and improved morale.

The new phase of the better vision program through scientific use of light and paint colors is based on the fact that many well designed plant lighting systems are robbed of efficiency by dull walls, ceilings and floors.

Research revealed that these surfaces could be finished with paints having much higher reflection qualities than previously was thought practical. In this way, illumination may often be doubled without altering existing facilities or increasing electric consumption. The entire interior becomes a giant reflector, and light rays instead of turning up their toes and dying on dark surfaces will bounce back and forth, doing their job over and over again.

For example, a white ceiling (reflection factor 90 per cent), ivory walls (75 per cent), a dado of green enamel (68 per cent), and a white floor stippled with brown (70 per cent) provide seeing conditions greatly over the average. Injuries decline, production improves and operators appreciate their cheerful surroundings (235)

From Melon Patch to Ice Cream Freezer

Zucca melons provide the basis for a unique British Columbia food industry. The melons are peeled and cut up into small pieces, which are packed into barrels. Sulphurous acid is poured into the barrels through the bungholes and the barrels are stored outside for a period of about ten days. They are then brought into the processing plant and stored for shipment.

The processed melons are sold to manufacturers and ultimately make their appearance in various colors and forms in tutti-frutti ice cream, in cake mixes, and in fruit cake sold by bakers.

The melons are grown in the boundary country around Osoyoos at the southern end of the Okanagan valley. The average weight of the melons is 40 to 50 pounds. (236)

Tests Oil From Po-Yok Trees

Further research into the properties of oil from the kernels of the po-yok tree has been made by the Imperial Institute with the assistance of research workers representing British paint and varnish manufacturers, reports the British trade press. Oil from the po-yok tree, which is native to tropical West Africa, is very closely related to citicica—so far the most successful commercial substitute for tung.

Tests indicate that po-yok oil has valuable properties for making paints and varnishes. The products are not equal to those made from tung, but generally are superior to those made from linseed oil, it is stated.

It is thought that Sierra Leone could ship 100 tons of po-yok kernels annually. While ordinarily this quantity would be of little commercial interest, under war conditions it merits consideration. (237)

Argentina Forms Edible Oil Industry

Cut off from her sources of olive oil by the war, Argentina has formed its own edible oil industry. Olive oil formerly was imported from Spain and Italy, but oil from sunflower seeds, peanuts and cottonseed is being used as a substitute. The number of workers now engaged in the Argentina edible oil industry is 123 percent higher than in 1937 and wages are 165 percent higher. (238)

* * * * *

Camphor trees, a Korean-Japanese monopoly, are being planted in California to supplement production here of synthetic camphor.

BY NATIONAL CAN

DECEMBER PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1942

Hydro-Cooler in Action

Hydro-Cooler Increases Shipping Range of Farm Produce

Top quality fruits and vegetables aren't top grade when the consumer opens the can in her kitchen unless the canner has been able to hold the time between harvesting and processing to a few short hours. The shorter the time, the higher the quality of the canned product. Ordinarily that means that canning plants must not be more than a maximum of 25 or 30 miles away from the fields or orchards.

Science is changing that. In the Pacific Northwest progressive growers have found out how they can ship some canning fruits and vegetables as far away as 250 miles with the assurance that they will reach the canner in A-1 condition. This is accomplished by hydro-cooling equipment which chills the produce to a point where it will not deteriorate in transit. A box-like device about 20 feet long, through which a conveyor moves, the Hydro-Cooler can chill asparagus with a field temperature of from 65° to 70° to 34° in 12 minutes. Ice is placed in the bottom of the cooler. As the produce moves slowly through it, a pump sends water over perforated baffles to spray the fruit or vegetable being cooled. The water is then returned to the bottom of the cooler for re-use. Pump capacity is 3,000 gallons per minute.

Hydro-cooled and properly shipped, produce reaches the distant processing plant in prime condition for canning. The advantage of being able to extend the radius of the source-of-supply area in wartimes, when growers of canning crops are handicapped by labor shortages, is one that few canners will fail to appraise properly. (239)

* * * * *

Men in the armed forces of the United States like their food well seasoned, judging from the vast quantities of salt and condiments purchased by the Quartermaster Corps. In recent purchases, the Jersey City Quartermaster Depot acquired 30,000,000 lb. of table salt; 1,800,000 lb. of black pepper; 3,600,000 lb. of prepared mustard, English type; and large quantities of dry mustard, the latter in 4-oz. cans for overseas shipment.

New Safety Solvent Cleans Army Rifles

A new hand-wiping safety solvent which is to be marketed as a safety replacement for naphtha, gasoline and kerosene in removing cosmoline out of rifles issued to troops, has recently been developed. The new solvent is also applicable for wide industrial use as a naphtha substitute for grease cleaning and hand-wiping operations in ordnance factories or shell plants.

The new solvent is described as a unique safety solvent because in spite of its high solvency against mineral oil or dirt, it does not de-oil the skin, has no toxic vapors, no flash or fire point, and leaves no invisible rust-preventative film so thin it cannot be detected. It is said to quickly lubricate and preserve wet metal surfaces from rust. (240)

Here It Is! This is synthetic rubber being taken off a moving belt and piled ready for shipment at one of the rubber plants of the Standard Oil Company. Less than twenty-four hours before this picture was made this same rubber for the most part was just so much petroleum refinery gas. Thanks, however, to some twelve years of pioneer experimental work and constant research, Standard's petroleum technologists learned how to convert these products into a synthetic rubber which will do its part to supply a nation whose natural rubber supplies have been cut off by Japanese conquests. (241)

* * * * *

There are 1,800 fats and oils, not counting petroleum and perfume essential oils. Of these, 30 are essential in war and industry.

Technical Topics

FERRIC SULPHATE is now used to restore the shine to brass. (242)

SULFA DRUGS, nemesis of so many bacterial diseases of men, didn't bother insects in recent tests to find its value as an insecticide. (243)

METHYL CELLULOSE is finding use in cosmetic products such as tooth paste, shaving cream, hand lotions and waving fluids (244)

GLUE volume may be increased through the addition of twenty-five percent of a new pulverized material. Glues containing the extender are also stated to flow freely. (245)

SOYBEAN and other semi-drying oils may be heated with a polyhydric alcohol and a polycarboxylic acid for the preparation of oxidizing alkyd resins by a method described in a recent United States patent. An acidic natural resin and fatty acids are employed to facilitate the combination of the oil and the resin molecules upon their formation. Solutions of the resins and a drier in mineral spirits produce films which dry hard and tough overnight. (246)

BLUE PHTHALOCYANINE is declared to be converted to a green or even yellowish-green pigment by the addition of oxazol, thiazol, or imidazol groups to the benzene nuclei of the original compound, according to a recent United States patent. The green shades are clear and fast, it is added, and were found to be suitable for use as printing pigments. (247)

BITUMEN DISPERSIONS may be economically coated on the inside surfaces of pipes to provide interior anti-corrosive coatings by an electrolytic method described in a recent British patent. Basis of the coating method was discovered when it was found that an electric current passing between two metal electrodes dipped into an aqueous bitumen dispersion caused the negatively-charged bitumen micelles to migrate to the anode and accumulate thereon as a gelatinous paste. (248)

LINSEED OIL—A new drying oil produced from linseed oil and intended as a replacement product for chinawood oil has been developed recently. In varnish cooking it is said to polymerize practically as fast as chinawood oil, and to dry hard and glass-like overnight when combined in protective coatings. (249)

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquirers to the original source of the article. Write to National Can Corp., 110 E. 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

(Advertisement)

WARTIME PACKAGING *by Menasha*

Over-wrapped Cigarette Carton for Overseas Shipment
Cartridge Carton
Ration K Package with Heat-Sealed Over-Wrap
Food Concentrate Carton for Ration K Package
Cartridge Clip
Heat-Sealing Bag for Moist or Liquid Content Frozen Foods
Heat-Sealing Ration K Bag

COVERS THREE PACKAGE TYPES

Does your problem involve a Carton? Bag? Over-Wrap? Does it involve a combination of two or of all three types? Here at Menasha our wartime service to packagers embraces all the fields.

CARTONS

Special paperboards, special construction and above all, special protection —these are factors in choosing cartons for wartime packaging. Menasha's resources and experience in carton manufacture are at your call for designing and planning carton packaging. Our production today includes cartons for cartridges, cartridge clips, dehydrated eggs and other dried foods, frozen foods, Ration K and many another direct-war product.

BAGS

Menasha pioneered the completely protective heat-sealed bag. Today our special bag machinery is producing protective bags for a variety of war products—Ration K, dehydrated eggs and other dried foods, frozen foods, concentrates, powders and many other vital products. The same fine protection is of interest to producers of drugs and medical products, surgical instruments, precision-machined parts and a wide range of war products requiring protective transit and storage.

OVER-WRAPS

Today's shipping requirements demand the protection of over-wraps. Here again Menasha's long experience is an asset to producers seeking the answer to war packaging. Our production includes over-wraps for metal parts, tobaccos and cigarettes for overseas, dehydrated eggs and other dried foods, Ration K, frozen foods and many another hard-to-keep wartime product.

SEND US YOUR PACKAGING PROBLEMS: A skilled staff of packaging technicians, package designers will devote their combined experience to your special problem.

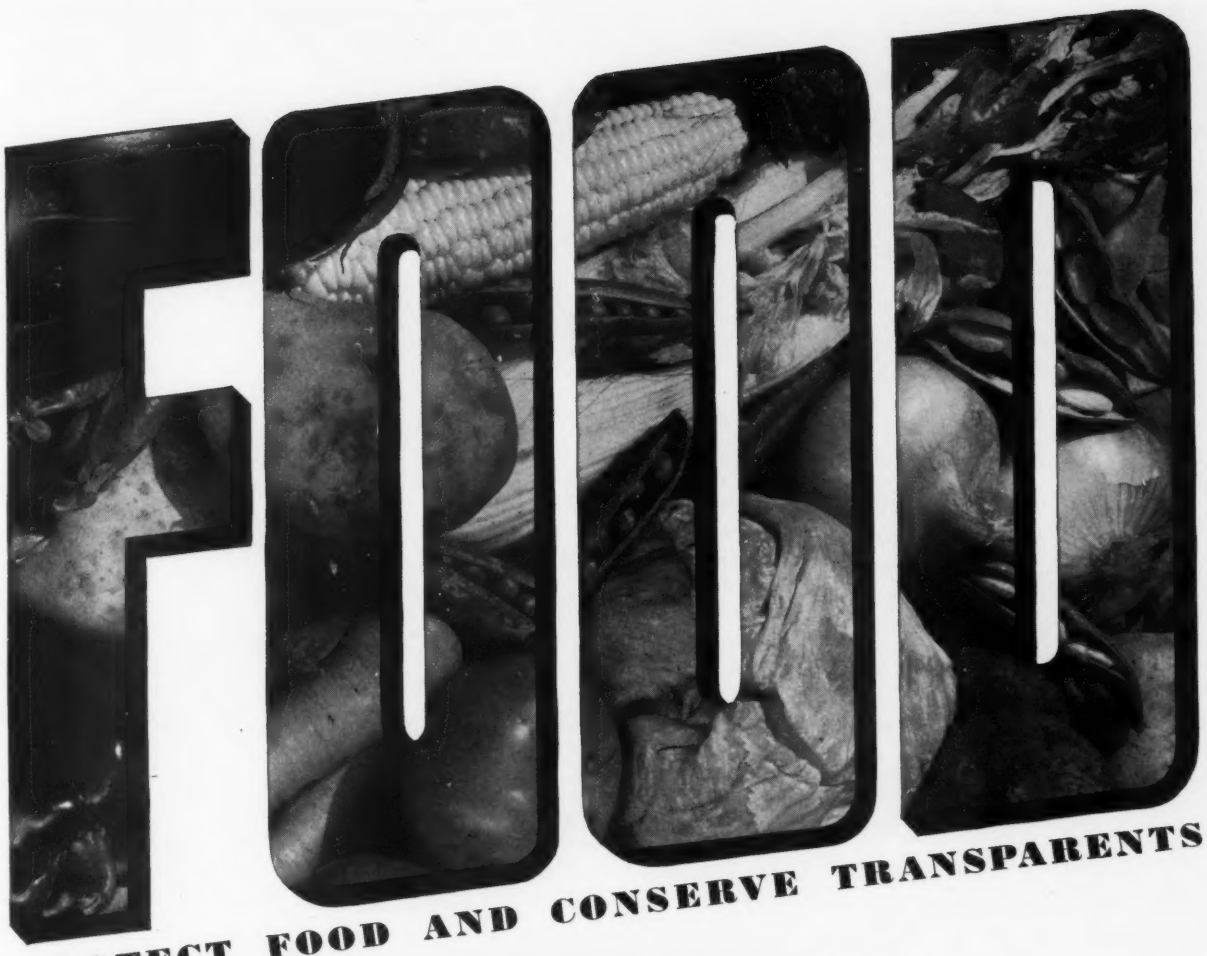
WAR PRODUCTS DIVISION

THE MENASHA PRODUCTS CO. MENASHA, WISCONSIN

Division of Marathon Paper Mills Co.

MENASHA

Menasha PRODUCTS



PROTECT FOOD AND CONSERVE TRANSPARENTS

WITH WINDOWS OF

LUMARITH

Transparents are critical war materials.

By using only windows in food packaging, you aid the Government's conservation program.

By using windows of crystal-clear, transparent LUMARITH, you give eye-appeal to foods (a high "priority" rating for fast sales!) at the same time you assure real protection. For LUMARITH neither shrinks, dries out, nor becomes brittle. It is unaffected by extremes of temperature and humidity. And LUMARITH guards against mold and poison gas—is water-proof, grease-proof, germ-proof.

Don't forget, too, that the right packaging helps increase consumption of National Nutritional Program foods.

CELANESE CELLULOID CORPORATION, 180 Madison Ave., New York City, a division of Celanese Corporation of America.

CELANESE CELLULOID CORPORATION

The First Name in Plastics

WHICH IS MORE IMPORTANT— WRITING THE COPY OR SELECTING THE MEDIA?

The Answer is—BOTH!

THERE is no competition between copy writing and media selection. The best in both activities is indispensable to successful advertising. Obviously the same degree of care used in producing a sales message should be employed in selecting the means to get that message before the right people. Guesswork, opinions and unverified claims have no place in media selection any more than careless phraseology and loose statements have in advertising copy.

Facts, decided by advertisers as essential in evaluating the advertising worth of media and in applying media to markets, are supplied in the reports issued by the Audit Bureau of Circulations. To buy advertising without this information would be like an attorney attempting to practice his profession without a law library.

This business paper is a member of the Bureau. Our A.B.C. reports tell how much circulation we have, how it was obtained, where it goes, an industrial or occupational analysis of subscribers, how much readers pay, the percentage of renewals and other facts that buyers need in order to select the media best adapted to their requirements. This information is verified by thorough audits of our circulation records, made annually by A.B.C. auditors. Advertising in this paper receives audited distribution.

SEND THE RIGHT MESSAGE TO THE RIGHT PEOPLE

Paid subscriptions and renewals, as defined by A.B.C. standards, indicate a reader audience that has responded to a publication's editorial appeal. With the interests of readers thus identified, it becomes possible to reach specialized groups effectively with specialized advertising appeals.

MODERN PACKAGING

Member of the Audit Bureau of Circulations ABC *Ask for a copy of our latest A. B. C. report*

A. B. C. = AUDIT BUREAU OF CIRCULATIONS = FACTS AS A MEASURE OF CIRCULATION VALUES

CELLOPHANE PROTECTS U. S. ARMY FIELD RATIONS

THE U. S. ARMY Quartermaster Corps uses Cellophane for many of the field food rations issued to soldiers.

These compact, energy-giving foods of various types are scientifically selected for a balanced diet, and they must be scientifically packaged to keep in perfect condition, winter or summer, rain or shine, jungle or desert. Cellophane helps protect the freshness and nutrition of these special rations under the most severe field conditions.

In addition to protecting U. S. Army food ration units, some of which are illustrated below, the Government is finding many other vital wartime uses for Cellophane, which require substantial quantities of our product.

All this is added testimony to the value of Cellophane as a protective wrap.

DU PONT
REG. U.S. PAT. OFF.

Cellophane

E. I. du Pont de Nemours & Co. (Inc.)
Cellophane Division, Wilmington, Delaware

UNITS OF U. S. ARMY FIELD RATIONS

"Our Best Salesman!"
Looks like a machine. It is a machine ...an automatic machine that swiftly shapes and seals Bemis Deltaseal Paper Bags. It is a salesman, too, for the bags it packs have substantially increased sales for the products they carry.
Bemis Deltaseal Paper Bags are quick to win retailer support. Their colorful brand printing adds eye appeal. Their square ends and sides make them easy to stack on shelves or in mass displays. Their pouring spout wins consumers' preference. Many a product that had been consigned to a corner, wins choice display positions when packed in Bemis Deltaseal Paper Bags.
BEMIS
Deltaseal
BAGS
PULL
CUT
POUR

BEMIS BRO. BAG CO.

Headquarters for the

DELTASEAL System of PACKAGING

Minneapolis, Minnesota

OFFICES: Baltimore • Boston • Brooklyn • Buffalo Charlotte • Chicago • Denver • Detroit • E. Pepperell Houston • Indianapolis • Kansas City • Los Angeles Louisville • Memphis • New Orleans • New York City Norfolk • Oklahoma City • Omaha • Peoria • St. Louis Salina • Salt Lake City • San Francisco • Seattle • Wichita

"HE THINKS EVERYTHING BAD
THAT WAS NOT INVENTED WHEN HE WAS A LAD"

The modern ideas: to simplify, save weight, pack maximum contents in minimum space, are expressed in Lightweight Boston Round stock bottles. 4 oz. 22 m/m 400 finish; 8 oz. 24 m/m 400 finish; 16 oz. 28 m/m 400 finish (shown); 32 oz. 33 m/m 400 finish.

YOU may find, if you search long enough, a glass package that has been on the market unchanged and successful for twenty years. You may find several —but they'll be rare.

In packaging as in other fields of design, basic principles remain stable but forms change constantly to meet new conditions. Faster packaging machinery, and new tastes among the people who are your market, mean constantly changing packages.

Perhaps one of our modern stock bottles or jars may be just the package you need to contain your product and help it sell.

CARR-LOWREY 3-Point Service

creates

PRACTICAL • ATTRACTIVE • ECONOMICAL

glass packages for cosmetics, drugs, foods, household products.

Carr-Lowrey Glass Co.

Factory and Main Office: BALTIMORE, MD.

New York Office: 500 Fifth Ave. • Chicago Office: 1502 Merchandise Mart

The Four Horsemen ride again

WAR HAS ONCE AGAIN loosed the Four Horsemen of the Apocalypse upon the world . . . fire, famine, sword, and pestilence.

In the last war, the most deadly of these was *pestilence*. And today, in Europe and Asia, there is already a wartime rise in Tuberculosis . . . the dread TB that kills more people between 15 and 45 than any other disease.

You can help prevent a wartime rise of TB in our country — by buying Christmas Seals today . . . and using them every day from now to Christmas. *They fight Tuberculosis.*

BUY CHRISTMAS SEALS

The National, State and Local Tuberculosis Associations in the United States.

Morale building Patriotic Box Covering Papers

We have recently created this and other inspiring designs in tune with the times.

Your public will thrill to them. Show the colors wherever possible and suggest that others do so too.

Samples and full information for the asking.

Royal Paper Corporation

Manufacturers of Decorative Papers

Eleventh Avenue and 25th Street • New York, N. Y.

This Sample: Pattern F. W. 742, white flint base
also available on other body stocks.

MACHINES MAKE BETTER GLASS

. . . when men like this run them

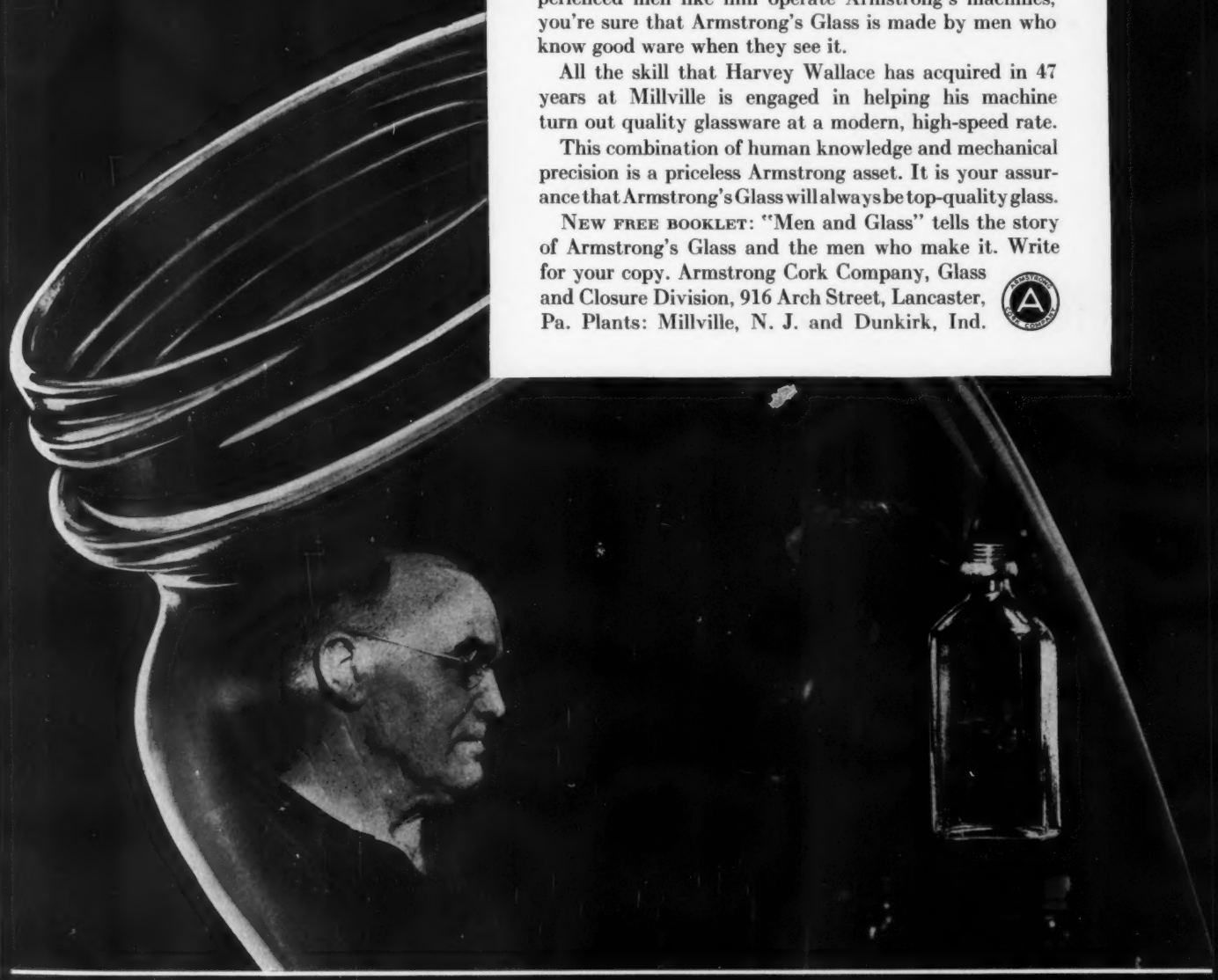
THIS IS Harvey Wallace. Years ago, he was a member of one of the most difficult and highly skilled professions in the world. He was a glass blower at Armstrong's Millville, New Jersey Plant.

Today, Armstrong's Glass is blown by mechanical lungs. And because Harvey Wallace and other experienced men like him operate Armstrong's machines, you're sure that Armstrong's Glass is made by men who know good ware when they see it.

All the skill that Harvey Wallace has acquired in 47 years at Millville is engaged in helping his machine turn out quality glassware at a modern, high-speed rate.

This combination of human knowledge and mechanical precision is a priceless Armstrong asset. It is your assurance that Armstrong's Glass will always be top-quality glass.

NEW FREE BOOKLET: "Men and Glass" tells the story of Armstrong's Glass and the men who make it. Write for your copy. Armstrong Cork Company, Glass and Closure Division, 916 Arch Street, Lancaster, Pa. Plants: Millville, N. J. and Dunkirk, Ind.



ARMSTRONG'S GLASS

and **ARMSTRONG'S CLOSURES**

Shown at the right are just a few Sutherland packages serving in the war effort or being used to replace containers that were constructed of critical materials.

FROM beans to bomber parts . . . from shortening to ship fittings . . . paperboard is packaging an ever-increasing amount of America's total wartime production.

Why? Because under forced draft paperboard has proved itself capable of many more uses than hitherto even imagined! Because, too, it has proved itself sufficient in strength, protective qualities and economy to replace the many critical materials that have "gone to war."

At Sutherland, paperboard has every chance to demonstrate its complete adaptability. Here, it can be special treated, laminated, or combined with other materials for adequate product protection. It can be fabricated into many sizes and shapes . . . rectangular, conical, cylindrical, and pail-shaped . . . and it can be printed for eye appeal and quick identification.

Sutherland's experienced packaging technicians are ready to help you with your problems. *Wire or call today for prompt action.*

SUTHERLAND PAPER COMPANY

KALAMAZOO, MICHIGAN

French Square, 1/4 oz. to 16 oz.
Chesapeake Oval, 1/2 oz. to 32 oz.
Cabinet Square, 1/2 oz. to 32 oz.
Squat Jar, 1/4 oz. to 18 oz.

Repackaging?

If wartime changes have made it necessary for you to repackage your product, we suggest that you investigate Maryland Flint bottles and jars. In our many smart stock designs and wide variety of sizes there may be available the type and quantity of bottles or jars that you desire.

Maryland Flint

BOTTLES and JARS

MARYLAND GLASS CORPORATION, BALTIMORE, MD. . . New York: 270 Broadway . . . Chicago: Berman Bros., 1501 S. Laflin St. . . . St. Louis: H. A. Baumstark, 4030 Chouteau Ave. . . . Memphis: S. Walter Scott, 435 S. Front St. . . . Kansas City, Mo.: Aller Todd, 1224 Union Ave. . . . Cincinnati: J. E. McLaughlin, 401 Lock Street . . . San Francisco: Owens-Illinois Pacific Coast Company

Blue will be back!

Unavailable today, rich, royal Maryland Blue Bottles and Jars will be back in the year 1 A.V. (after victory) to "stop the eye and start the sale" as in the past. Put a note in your post-war plans file: "Look into the merchandising advantages of Maryland Blue Bottles and Jars."

The most pertinent problem confronting American Business today is the conservation of materials and manpower.
No business can afford to remain normal during this critical period . . . certainly not our business! Our products will continue to be made and sold only to the extent and in such ways as modern packaging can contribute to the all-out war economy.
To that end, our organization is meeting the problems of today with today's answers. Our customers are standing with us at the command of our country with a mutual understanding of the situation.
Modern packaging is not "out of the window" for the duration, far from it — modern packaging is donning the uniform of service, modified and simplified to save labor, transportation, and materials.
CREATORS · CHEMISTS · CRAFTSMEN
NASHUA
MAKES PAPER MAKE MONEY FOR YOU
BUY U. S. WAR BONDS AND STAMPS
NASHUA GUMMED AND COATED PAPER COMPANY
NASHUA, NEW HAMPSHIRE

MODERN PACKAGING
DECEMBER 1942 VOLUME 16 NUMBER 4

OIL FOR THE THEATRES OF WAR

In a New York City office, the name of which we have been asked not to mention, is a row of shelves lined from floor to ceiling with substitute containers for quart cans of motor oil. First, there are glass jars with metal closures, then fibre cans that oil men call "salt boxes." There are cone-shaped containers of paper. There are bags in cartons. Each of these has its own claim to fame—a liner, a coating, a lamination supposed to make it better than any other to hold oil. There are literally hundreds of these samples. Many are similar in principle and construction, but every now and then a "sport" crops up in the lot.

Millions of dollars have been spent on them by inventors, promoters and oil companies. Hundreds of work years, in the aggregate, have been spent on their development. Four of the inventors went crazy. One promoter landed in prison for swindle.

In spite of all the money spent and all the work done, leading men in the oil industry are not yet completely satisfied that any of these substitute containers is equally effective on all scores as a match for the metal container to hold oil.

Several companies are using some of these containers. Others are selling them in test areas. They must use them if they wish to continue selling oil in quart containers to civil-

Gas and oil are the life blood of mechanized warfare. Millions of gallons of gas and oil now go packaged directly from this country to the armed forces in the famous "blitz can (below)—a 5-gal. steel container for land or sea. Air compartment on rounded side prevents can from sinking.

ians. No more metal is allowed for this purpose. (M-81).

The petroleum industry knows now they should have paid more attention to these developments before the war started, but such things are not done until there is necessity. Two years ago, the only reason for these experiments was the possibility of finding a cheaper and more efficient package than a metal can. Substitute containers could not then, and cannot now, meet price competition of a metal container. But cost is no longer the main factor. The crying need is a substitute.

That is only a part of the story of one of the biggest packaging problems of the war—if not of all time. Across the African desert, in the islands of the Pacific our men are racing in tanks and planes. The life blood of that equipment is gasoline and oil. Without it a tank is a useless hulk of steel by the side of the road. A plane cannot fly.

To supply fuel to those tanks and planes takes steel—steel that is also needed to make the very same mechanized equipment that has to be fed with fuel carried in metal containers. Aside from wooden barrels no satisfactory alternate is yet developed to replace the millions of steel drums now carrying gas and liquid oils to the armed forces. If it is so difficult to make a satisfactory quart container for oils out of alternate materials, it can be appreciated how much more difficult is the job of making alternate drums to hold 55 gallons or more.

The War Department will not accept gasoline and oils for military export shipments in anything but metal in spite of its desire to conserve steel for the manufacture of guns and mechanized equipment, or in spite of its desire to prevent loss of steel used in drums discarded by the wayside by moving troops after the contents have been used. Steel drums that go to the front cannot be returned for re-use like those in domestic service which are returned for repeat trips. The need for fueling mechanized equipment on foreign soil is too imperative to take chances with containers that are not foolproof. Modern warfare demands millions of gallons of gasoline and oil packaged in drums which can be deposited at oil dumps in strategic locations and picked up quickly by motorized units on the march. They must withstand every kind of climatic condition and rough handling. There are few filling stations in a desert or in the jungles of the Pacific Islands—yet the motorized units must keep rolling. They must carry all their fuel with them, or pick up fresh supplies at oil dumps as they go along. They can't rely on tank supply trucks. Besides, such methods of shipment require countless handlings—first from refineries into tank cars or trucks to seaports, then from trucks and cars into tanker ships, then unloading again from the ships into more trucks and tank cars in foreign ports. A great part of this handling is eliminated by the use of containers which can be filled and shipped directly from this country without transfer until they reach the point of battle where the contents are to be used.

The Nazis discovered this early. From them, we learned the method of transporting gasoline, oil or water in the now famous "blitz can." This is a 5-gallon metal container with handles on the top and an air compartment on the rounded side, so that it will float if dropped in water. It is suitable for any type of modern warfare—land or sea. It is small enough to be carried easily by hand. It will withstand any temperature or climatic condition—hot or cold, wet or dry. Millions of these blitz cans are now being used by our armed forces, shipped directly from petroleum distribution centers in this country—not opened until they reach the war theaters.

To beat the efficiency of this container with a substitute in this war may be an impossibility. To beat the efficiency of the standard 55-gallon steel drum for export shipments of gasoline and lubricating oils is a serious challenge to the packaging industry. Containers of other materials than metal,

however, are being used successfully for domestic shipments of greases, asphalts and waxes.

Demands on the country's supply of steel is great. Even if the government continues its ruling that metal containers must be used for military shipments of oil, no steel will be permitted for domestic distribution of petroleum products or for export shipments of such commodities to non-belligerent countries such as South America. Order L-197 forbids the use of steel drums for domestic shipments of many petroleum products. Order M-255 provides that buyers of steel shipping containers must have their purchase orders approved by the Director General of Operations before the manufacturer can accept such order or make shipments. This order is of some help in relieving the tangled situation of priorities, but it also makes it virtually impossible to obtain steel drums for other than essential war purposes. It limits use of steel containers by oil companies to existing inventories unless permission is granted under the aforementioned order. These orders became effective in November.

Some authorities have placed requirements of steel shipping containers for 1943, including all sizes from 5 gallons to 110 gallons, at 40,000,000. Others think this is a little high.

Serious attention was given to the saving of metal used for petroleum product containers last April when the National Containers Subcommittee of the Petroleum Industry War Council launched a plan for conservation of containers approved by the petroleum coordinator.

This plan promoted re-use of containers by encouraging emptying and returning them quickly, by requiring deposit charges on re-usable containers, by promoting bulk sales wherever possible, by stressing the necessity for better care of containers to be returned, and by reducing brands.

Another important step provided by this plan was a complete standardization of sizes and specifications of containers used for petroleum and petroleum products as follows:

Steel Drums:

55-Gallon	16 Gauge, ICC	Gasoline, Lubricating Oils, Fuels
55-Gallon	18 Gauge	Lubricating Oils—Specialties
30-Gallon	19 Gauge	Lubricating Oils—Specialties
14-Gallon*	20 Gauge	Lubricating Oils—Specialties
400-Pound	18 Gauge	Greases
400-Pound	28 Gauge	Asphalts and Waxes
100-Pound*	20 Gauge	Greases
Slack Wood Barrels		Crude Scale Wax

*These packages to be made on the same dies, the only differences in the package being in the head.

Oil Cans:

5-Gallon Pail or Drum—Paneled—Black Iron	24 Gauge	Lubricating Oils—Specialties
5-Gallon Round Can—Black Iron	24 Gauge	Kerosene
5-Gallon Square Can—Black paneled—Black Iron		Lubricating Oils—Specialties
2-Gallon Oblong Can—ditto		Lubricating Oils—Specialties
1-Gallon Oblong Can—ditto		Lubricating Oils—Specialties
5-Quart Can—Black Iron	4/5's to case	Lubricating Oils
1-Quart Can—Black Iron	24/1's to case	Lubricating Oils

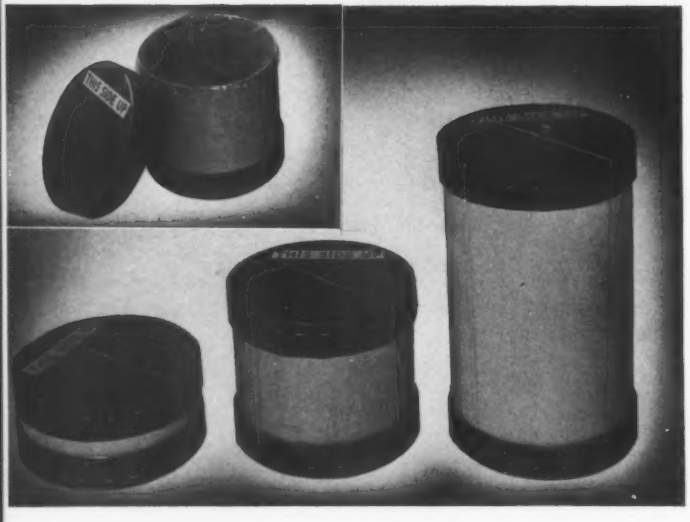
NOTE: In connection with the 5-quart cans, arrangements are to be set up so that the volume of 1-quart to 5-quart cans will not be in excess of the ratio of six to one.

Grease Cans:

25-Pound Pail—Black Paneled—Black Iron
10-Pound Can—Black Paneled—Black Iron
1-Pound Can—Black Paneled—Black Iron

Specialties: No reference—already provided for in Order M-81

Left. In first World War, 95 per cent of petroleum products were shipped in wood barrels. Right. Cooperage industry is working to capacity to produce barrels for domestic shipments and export to South America. Bottleneck, however, is shortage of skilled labor and cured wood for staves.



Top. Modern wooden barrels are treated with special weatherproof coatings to prevent swelling, shrinking, slackening of hoops and warping. They are also equipped with metal flanges and plugs. Center. Plywood drums have been developed for greases. Not yet satisfactory for liquid petroleum products. Bottom. Examples of fibre drums used for greases, waxes and asphalts. Also not recommended yet for liquids. Everybody is working to develop a substitute container for this purpose.

The program set a goal of at least four trips a year for re-usable drums. It also provided for the use of wooden barrels wherever practicable in domestic and export trade for greases, unfiltered compounds, cylinder oils and petrolatums.

Since Order L-197 and Order M-255 went into effect in November, the problem calls for more than conservation. It means alternates and substitution of containers made from materials other than metal for all but military shipments. Chief possibilities of such substitutes are as follows:

Wooden Barrels—In World War I, veteran oil men say, 95 per cent of the military shipments of petroleum and petroleum products were made in wooden barrels. The low-cost steel container has been developed since that time with the growth of the motor industry. Wooden barrels are coming back strong for carrying petroleum products, particularly for domestic distribution and export to South America. Chief disadvantage from the oil industry standpoint is the care that is required to keep barrels in efficient condition. Excessive dryness or moisture causes barrel staves to shrink or swell, warp, or to loosen the hoops, causing leakage. A 55-gallon, 18-gauge steel barrel weighs 51 lbs. A 50-gallon wood barrel weighs 72 lbs. and takes a space a foot larger in a ship, because of its bulge. Cost of a wood barrel is about a dollar more than a steel drum. Also a wooden barrel requires for hoops and other metal parts about 20 per cent of the amount of steel required to make a steel drum of comparable size. There is a shortage of skilled labor in the cooperage trade and also of cured wood ready for staves. However, there may be more barrels available due to the freezing of the distilled liquor industry, one of the largest users of barrels.

In spite of this seemingly long list of disadvantages, the wood barrel is back with a vengeance. The cooperage industry claims it can produce some 6,000,000 barrels a year. The government has estimated that this could be stepped up to 14,000,000 barrels.

Many improvements have been made on the modern barrel. One oil company representative told us about a weatherproof barrel which his company considered most favorably. This weatherproof coating, which appears to have an asphalt base, is claimed will withstand heat, cold, dryness and moisture without causing swelling or shrinking of the wood, slacking of the hoops, warping of heads or opening of joints. It is recommended for export shipments. These modern barrels are also equipped with metal flanges and plugs, one 2-in. and one $^3/_4$-in., in one head of each barrel. These make it possible to syphon out contents the same as from steel drums. The barrel, thus, is also more adaptable for re-use. These modern barrels are equipped with inside coatings for certain products.

Fibre Drums—Fibre drums have been used successfully for domestic shipments of greases, waxes, asphalts and other types of solid or semi-solid petroleum products. They have not yet been made suitable for the shipment of liquids such as lubricating oils, fuels or gasoline, according to authorities in the paper, fibreboard and petroleum industries. Some believe this may not be accomplished during wartime because of the problem of securing new mechanical equipment and labor for fabricating such containers and because of the shortages of certain raw materials such as coatings and impregnating compounds to give the paper its protective qualities.

Makers of fibre containers, converters and manufacturers of chemical compounds for glues, coatings and liners are keenly interested in the possibilities for the development of such containers. There is, however, a certain apathy on the part of some fibre container makers at this time. The attitude is this: "We thought of it long ago, we wanted the oil companies to cooperate—we warned them (*Continued on page 138*)

Good Will Among Men

Peace can exist only among men of good will. Even with the world at war, America has a heart of peace because good will prevails. Neither political differences nor commercial rivalry can destroy that good will, for it is America's strongest characteristic. It explains many other characteristics—good humor, love of peaceful activities, distaste for destructiveness, sense of fair play, respect for individuality, consideration for the rights of others, spirit of friendly competition.

For these gifts we are profoundly grateful. That they yield tangible benefits is no accident. The good will enjoyed by a branded or packaged product, for instance, is the direct outcome of the character built into it by its producers. The inevitable harvest is a national prosperity that is the envy of earth's less fortunate peoples.

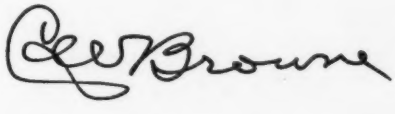
Paradoxically enough, we are in this war to extend good will. All indications point to a long struggle, for selfishness and malevolence die hard. While all our present effort is devoted to production for destruction, as we look deeper, we see that that effort is merely a heavier-than-usual installment payment to insure our future, for payments must be made through the years if we are to go on living the American way.

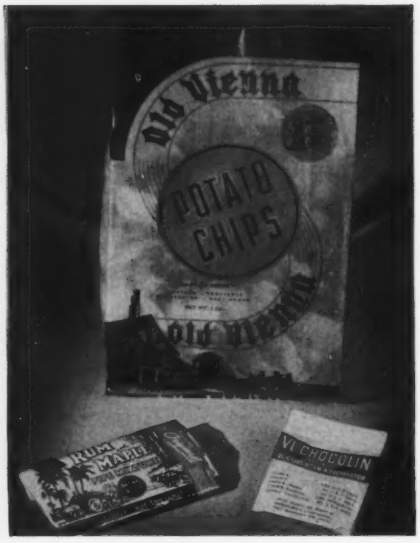
Thus in time of war do men of good will prepare for peace. Indeed, the blood, sweat and tears of the war years will be wasted unless lasting peace is their goal. And as we plan, ideals must be preserved but facts must be faced realistically with no whit of relaxation in our vigorous prosecution of military measures.

In world politics, realistically we must face responsibilities that cannot be evaded. We cannot turn our backs on them as we did in 1919. Nor can we neglect to take advantage of our position as the world's pantry to feed people at the price of their decent behavior. The power of the bread basket must be supplemented with the force of the policeman's club, when and where needed. As order begins to come out of chaos, we must help a bewildered world to re-engage in constructive activity. Not until then can we hope to re-educate people brought up on savagery to adopt the philosophy of good will. And only if we ourselves undertake these tasks, not with vindictiveness but with good will, can we hope for permanent success in them.

Civilian commerce is now gearing itself to complete government control, with concentration of all industry an imminent possibility. Our planning for the days of peace must face realistically the fact that powerful forces will strive to keep these controls in force. There is nothing sinister about that —there will always be those who sincerely believe that centralized government control of industry is a desirable regimen. But—with all good will—we must plan for the complete restoration of private enterprise and the marketing of branded and packaged merchandise must be fully resumed. We must plan now on a course in our public relations that will convince the consuming public that the competitive system will perform the greatest public benefit because only under the spur of competition can research, service, quality and economy reach their finest flowering.

The world longs for peace. But peace begins in the heart. We must earn it; we must plan for it. No better way can be found than the cultivation of good will among men.





1 2

1. Double-wall translucent cellophane bag "hit-and-miss" sealed, usable as interior container for cartons or fibre cans, or will serve without outer shell. 2. Laminated bags retain or exclude moisture for variety of products.

More about laminations

A new chapter in packaging was written when someone—perhaps by accident—made this discovery: When two sheets of wrapping material are glued together the combination has qualities of strength and appearance that neither sheet had by itself. Sounds elementary, doesn't it? But that's exactly how laminating began.

There is really nothing new about lamination, although it is only recently that the possibilities of laminating have begun to be explored to provide alternate materials in place of packages that are on the critical list. At first, laminating was confined to decorative purposes. A transparent acetate sheet was used to add a lovely gloss to beautify a book cover or a carton. Often the liner could be applied to form a window, and the carton would have the tremendous advantage of visibility. Now, of course, decorative packaging is being side-tracked; particularly if critical materials are involved, decorative packaging is absolutely forbidden.

Far from being temporarily thrown into the discard, however, the laminating experience gained in decorative treatment is being put to excellent use today. In fact, it can safely be said that if it were not for this experience, it would have been years hence before the many successful packages now appearing would be developed. Not only is the packaging field in possession of this rich experience, but the equipment is in existence and ready to operate. There are laminating plants in perhaps a dozen different states, serving most of the important production centers. How fully this capacity is occupied any one may guess. Without a doubt it would be impossible to obtain equipment to perform these services if that equipment were not already in existence, because of the steel shortage. Certainly these plants will be given every opportunity to demonstrate their functional utility.

When shortages of tin, steelplate, rubber and the like first loomed, the frantic search began for packaging materials to take their place. For some products there probably never will be a package that can take the place of metal, but there are appearing some very good tries at it. Many products, it is being discovered, can get along quite well without metal. The tin or terneplate package is strong, is resistant to oil, moisture, acids, alkalies, temperature changes and light. There is no other material so versatile. But, here is a solution: one sheeting is opaque; another can be coated to resist oil; another can furnish structural strength. Put these three together, by means of lamination, and you'll have a package that is structurally strong, that resists light and that holds an oil-content product. As there are scores, perhaps hundreds of different wrappings suitable for packaging purposes, it can easily be seen that almost limitless types of materials can be built up to meet almost any requirement.

Not the least important element in the laminating process is the type of adhesive used which in itself may possess a property that will prove important in the finished sheeting. For example, asphaltums are being used extensively. These contribute such qualities as opacity and resistance to temperature changes besides being applicable in varying thickness. Waxes, too, are useful as laminating agents because of their diversified qualities; glues, synthetic resins and lacquers—all are enlisted in the service of lamination.

The use of adhesives in proper amounts, is a point to be watched carfully. Here, of course, is an opportunity to economize but, as is often the case, commendable efforts to save may prove to be false economy because inadequate kinds or quantities of adhesive simply will not do the job, and their whole purpose is defeated. The result may not only be losses of content but perhaps condemnation of a packaging method that could very easily have been satisfactory.

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Properly applied laminating agents serve excellently to perform the following functions:

1. Adhesive.
2. Moistureproofing.
3. Stabilizing the sheet. For example, if one type of sheeting material by itself shows a tendency to get brittle, a properly selected laminating agent will insure flexibility.
4. Light-resistance. Example: Asphalt.
5. Inhibition of mold and insect infestation. Example: Pyrethrum.

The laminating process is simple enough. As one technician described it: "You simply lay down a film coated with wax or resin, put on your other film and finish under heat and pressure." How much heat, he said, depends on the material and the wax. Amount of pressure required depends on the kind of finish desired. For example, the lamination of a book or magazine cover with a cellulose sheeting would require considerably more pressure than the lamination of a packaging material. In general, the glamour jobs are more difficult than the utility jobs, because the element of finish is more important.

Laminated sheetings actually offered commercially as

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3. Inner bags of laminated glassine give double protection and in some cases make up for lack of outside foil. 4. Dehydrated soup mixes appear in laminated envelopes with or without cartons. 5. Five protective wrappings, the innermost one lead laminated to glassine, keep "London Dock" tobacco in smokeable condition. 6. Little laminated packets for army rations. 7. Early example of bag-in-box demonstrates long life of this type of package.

7

stock items have appeared already in considerable numbers.

One mill produces a triple-ply sheet made by laminating moisture-proof thermoplastic cellophane to a duplex sheet of high-grade bleached glassine. This, it is claimed, affords moisture-vapor impermeability, resistance to grease and has excellent strength and pliability as well as heat-sealing properties. The same basic "recipe" is used with slight changes in the "ingredients," such as the use of white opaque glassine to provide opacity or the substitution of high density kraft to provide strength.

Another producer offers several varieties of wrapping materials, consisting of impregnated and coated paper laminated to cellulose sheeting. Other forms of the same company's materials substitute fabrics for the paper. These sheetings, while not primarily developed for packaging, have been put to service in that field. For instance, one of these sheets has been used as a liner for cases to hold precision and semi-automotive and aircraft parts, packed for foreign shipment.

Another laminator has turned out a sheet which comes very close to the inventor's dream of a one-way glass. Looked at with the light at the observer's back, it has all the characteristics of a mirror, but held up to the light surprisingly enough it becomes a transparent sheeting.

The cellulose sheeting converters, most of whom are busily engaged in war work, have clapped on all sail to develop laminations capable of substituting for metals. One of these is producing an acetate sheet laminated to foil. Another of his products is a double-wall cellophane with moisture-proof and heat-sealing qualities. Still another is the moisture-proof thermoplastic cellophane laminated to glassine. In playing around with heat-sealing methods and compounds this same converter has developed what might be called a "hit and miss" heat-seal which for strength and durability reminds one of the double seam on a garment. Another well-known fabricator of cellulose sheeting has perfected various combinations of this material laminated to various kinds of paper, including 40-lb. kraft.

Reference has been made in these columns several times to a 5- or 6-ply laminated material (see Modern Packaging, May 1942, page 52). Since this was first launched, its usefulness has been rapidly extended. Because it exemplifies the versatility and adaptability obtainable through lamination, it must come in for another mention at this juncture. This sheet is made up of (1) dense kraft, (2) asphaltic compounds, (3) solid sheet alloyed lead, (4) moisture-proof adhesive, (5) cellophane, (6) special heat-sealing coating. It seems to be living up to the claims for it which include moisture-vapor resistance, air-tightness, water-tightness, prevention of insect infestation, light resistance and odor-proofness. This sheeting is now utilized almost exclusively for the government's requirements.

Laminations are by no means confined exclusively to flexible sheets. One board mill has recently gotten out an at-

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8. Smokers need fear no tobacco shortage because laminated paper packages now protect contents as well as the tin did. 9 and 10. Shortenings now denied tin find various forms of laminated paper packages excellent substitutes. 11. Caulking compound, some thought, could only be packaged in tin but laminated paper serves very well now.

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12. ***Laminated bags, heat-sealable, adhere to the inner walls of folding cartons.*** **13.** ***Frozen meats and eggs are kept in prime condition in laminated cellophane bags within carton. Exterior wax coating prevents damage from refrigeration.*** **14.** ***The boys at the front find in their emergency rations these little laminated bags containing salted nuts. These have relatively simple construction.***

tractive "demonstration kit" containing 14 different kinds of laminated carton stock, including such varieties as the following: Clay-coated boxboard, laminated to a board lining paper with a wax adhesive. Clay-coated boxboard double-lined laminated to a moisture-proof cellophane. Uncoated boxboard, newsback, coated with an opaque grease-resistant finish. Uncoated boxboard, newsback, laminated to an unbleached grease-proof paper with a plain adhesive. Clay-coated boxboard, newsback, combined with a laminated glassine using a wax adhesive.

One paper converter not satisfied with the theoretical potentialities or properties claimed for different materials, conducted a series of tests of various laminated sheetings. All his tests, he told us, were conducted with bags made from the protective material in order to obtain results comparable to what can be expected from the finished package as it is actually used. He considers—very properly—that the seams and sealed joints must be tested as well as the materials in sheet form, for unless a sheet can be fabricated into a usable container, the properties of the sheet as such are of little avail. Although testing methods are still in an unstandardized situation, the tests made by this particular fabricator appear to be thoroughly scientific in their approach and method. This is but one instance of a practice being followed by a number of paper converters.

Since America is rapidly becoming the supply house of the whole world, it is interesting to note what products are already appearing in some of these materials: frozen foods, dehydrated foods for both commercial and government use, confectionery and tobacco, cheese, syrups, vegetable shortening, lard, coffee, baking powder. The illustrations show examples of packages made for many of these products ranging from the simplest "bag-in-box" type to many more complicated structures.

One of the pioneers in the development of this type of package was not strictly an example of lamination. It consisted of a cellophane bag used to contain a print of shortening made from vegetable oils. The accompanying photograph was made from a package which unmistakably showed its age, but at the same time demonstrated its efficiency as a packaging material.

"London Dock Smoking Mixture" now comes in a five-ply wrap. Two of these plies are laminated. The outer wrap of cellophane provides moisture-proofing; next to that is a paper wrapper on which the design of the package is printed in black on a gold background. Inside of this is a chipboard shell which gives structural strength. Inmost layer is a sheet of lead foil laminated to glassine with a plain adhesive.

Dry skim milk, green pea soup base (dried), salted nuts, vegetable shortening—these are just a few of the products being packed in a container to which war shortages have given new impetus, since it was first launched (see Modern Packaging, January 1941, page 74) Practically all of these products require the moisture-proofing and protection which was previously supplied by tin. The outer carton has a lining affixed to it, which in some instances, is cellophane laminated to cellophane; in other cases it may be cellophane to parchment with a provision for heat-sealing. The inner bag can be devised of laminated sheeting to provide the kind of protection required by the particular product. One example not included in the illustration is (*Continued on page 138*)

Packaging Pageant

1 With many decorative materials rapidly disappearing, ribbons are serving as an excellent means of dressing up and adding sparkle to everyday packages. These two gift boxes of food from Gristede's Bon Voyage Shop are given a gay effect with bright ribbons. The jams in a small bowl and the box of sweets are planned as gifts for the man in the service. Decorative ribbons by Taffel Bros., Inc.

2 In this carton for Preferred Confections of the C. S. Allen Co., clever cutouts have taken the place of a cellophane window. In designing a carton with a cellophane window for the previous package, the company had in mind, of course, the consumer appeal of product visibility. When it became advisable to eliminate the cellophane, a carton was planned with these cutout initials. The advantage of visibility was retained with no loss of good package appearance. Carton by Robert Gair Co., Inc.

3 Lentheric, Inc., groups a perfume trio in a gay little Christmas tree of bright red for a holiday gift package. It is trimmed with a gold-tone boutonnière and tied to its topmost branch is a crisp red bow. Inside the tree are miniature replicas of the larger, original flacons of Tweed, À Bientôt and Confetti perfumes. The tree has a gay, festive air and can readily be used as a table decoration during the Christmas season.

4 Spot-a-Plane of Toy Creations, Inc., is a game which illustrates the application of functional design to wartime educational entertainment. It has been authorized for publication by the War Department and is a game during

which the player learns the general appearance and characteristics of the military planes of the different countries. A playboard, a master intelligence chart and the playing cards are packed in a set-up box with a five-color tight wrap. The top of the box shows a large plane in full color. The skyline background has a poster effect. Created and designed by Koodin-Lapow Associates. Boxes by Minkoff & Rosenfield Bros., Inc. Wraps by Baynes & Mayer Co.

5 A first perfume by Jaquet called Fire Magic is being put out in limited quantities in a hand-made, heavy crystal bottle with a glass stopper shaped like a tear drop. A golden metallic identification disc around the neck bears the brand and product names. The bottle sits in a recess on a built-up pedestal-like base which is covered with satin. The top is cylinder shape and is covered with the same, fire-red satin as the base.

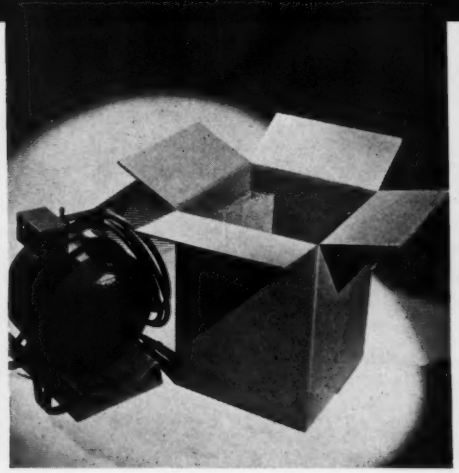
6 An attractive new idea for packaging cookies is shown in the J. B. Carr Biscuit Co. bag for its School House cookies. This cellophane cookie bag looks like a school house and even shows the students at work and at play for added realism. The bag is printed in red, white and blue and is entirely opaque except for the windows which are of clear cellophane. The cookies show through these windows, making an unusual package that protects and displays the product. Bag by Milprint, Inc.

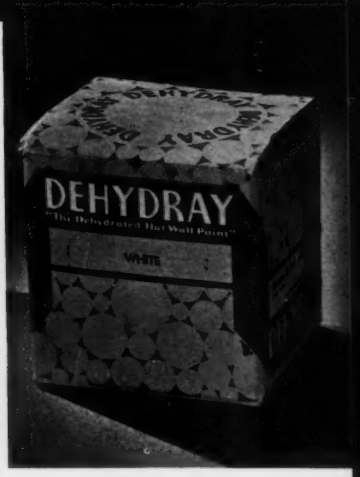
7 Amber-colored bottles and eye-catching labels of green and white give these packages for turpentine of Turpentine & Rosin Factors of Savannah, Ga., a dressed-up appearance. The lightweight glass bottles are used in place of the former metal cans and have been designed with definite thought given to their attractiveness. The can had a spot label placed directly on the metal. New labels are wrap-around. Bottles and caps by Hazel-Atlas Glass Co. Labels by Kennickell Printing Co.

8 Distribution of Lipton tea in brand new red and yellow packages has just been announced. They are designed to stand out on shelves and counters and use the traditional Lipton color combination, with tones heightened, new typography and a new portrait of the company's founder, Sir Thomas Lipton. In line with war requirements, these cartons are made of non-priority material. Instead of the foil, glassine is used now and the cellophane wrap has been eliminated.

9 How to simplify packing operations without sacrificing necessary protection for their product in transit was the problem of the Linendall Corp. The Safety-Fil Brake Pressure Bleeder is a heavy, irregularly shaped piece of equipment with precision mechanisms which must be fully protected in shipment. To pack it efficiently, effectively and economically, an easily assembled, tailored inside pack to fit around the odd-shaped product was created. This, in turn, is set into a regular slotted shipping box so that there is double-thickness corrugated cushioning. Corrugated box by The Hinde & Dauch Paper Co.

10 Dehydray is a new type water paint developed and distributed by Devoe & Raynolds Co., Inc. This dry paint, which is ready to apply when water is added, comes in 3-in. and 5-in. cube-like cartons. The 3-in. size makes a quart of paint and the 5-in., a gallon. The carton is of paperboard printed in 3 colors and varnished on the outside to give a glossy surface. The paint is enclosed in a bag made of specially treated, waterproof paper. Carton by Worcester Paper Box Co. Bags by Ginsburg Bros.





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1. *Instead of steel pails, malt syrup will soon be in this fabric-bag-within-a-carton package.*

"Pillow" in a carton

A representative of Standard Brands, Inc., turned up the other day with a strange device which he said will take the place of a steel drum.

Under his arm he carried a large corrugated shipping container. He took out of it a contraption that looked like the air-filled cushion grandma uses to absorb the shocks of back-seat driving. Inside the "pillow," instead of air, were about 2½ gals. of Fleischmann's liquid Diamalt, weighing 30 lbs. This malt syrup is used widely in bread making by commercial bakeries.

"It's our substitute for a steel pail," he said proudly.

It all came about this way. When the government said no more metal, Standard Brands began looking around for something else. They tried this and that without success.

Then one day Thomas R. Baxter of the Purchasing Department saw some cloth used for army raincoats. "Maybe that's it," he thought and asked the manufacturer of this fabric to make a bag of it. This is waterproofed with a special coating. The fabric was coated inside with a non-toxic compound so that when folded to form a bag it can be heat-sealed all around, except for a 6-in. opening for filling.

Instead of starting with the same quantity that went into the formerly used 60-lb. steel pails, the company considered it advisable to start with a bag holding 30 lbs. of Diamalt. The bag, empty, is placed inside a carton and then filled. The 6-in. opening for filling is placed between plain flat jaws of a heat-sealing machine. After this operation the outer carton is slipped on and tape-sealed with 3-in. cloth tape. The combination bag in two cartons has been patented—a patent which does not interfere with patents on other types of bag-in-carton packages. In addition to the specially treated waterproof fabric used for the bag, an outstanding characteristic of this package is the way the bag fits into the shipping carton so that there is no undue strain which might cause failure in shipping. At the same time there is sufficient "give" in the bag and the product to allow a severe blow without damaging the bag or the contents. The simile describing this characteristic is "like a willow tree compared with an oak in a storm."

The completed package was sent to the Container Testing Laboratory for testing. In the revolving drum, samples passed severe drop tests simulating conditions under which they would be subjected in shipment. In tests running up to 500 drops, the cartons were damaged but the bag remained intact.

The package is identified by a large label pasted on the side of the outside carton. Instructions on how to open and use the package are given on a label pasted on the short top flap that acts as hinged flap. To open the package, the tape is cut on three sides of the top flap. The top flap is then bent back and reveals a corner of the bag between two small flaps of the inner carton. A rubber-stamped line on the corner of the bag shows where the user should cut it. After this is done, the carton is held under the arm and the desired quantity may be poured out. After the desired amount is dispensed, the outer flap, pulled up slowly toward the bag, serves to cut off the flow. When the inner flaps are replaced on each side of the bag opening, the package is ready for storage until another usage is desired. Labels will be replaced later by printing done directly on the cartons themselves.

These new containers are being market tested among selected customers for the product. Plans are to launch the package about January 1. Customer reaction has been good so far. However, the company believes most customers would probably prefer drums, but it does not expect serious protest when the necessity for this wartime substitute is explained.

The supply of steel pails for this purpose is already exhausted and the company will make use of wooden kegs to fill the gap until the new bag-in-carton package is in full production. However, wooden kegs do not compare favorably in cost, they said, with either drums or the new package and bakers who use this product would not stand for this additional cost in the long run. During the stop-gap period until the new container is ready, the company will pay the higher cost of the wooden kegs. They also claim the cost of the bag-in-carton package is about half the cost of the steel pails formerly used.

Two alternate compounds are used for the waterproofing of the fabric. One of these is critical; the other one is not. Therefore, no difficulty is expected in obtaining a material for the waterproofing treatment. Better methods of sealing are known, but the one selected for this process appeared to be the only one suitable for application with existing equipment and, of course, no new sealing equipment can be procured at this time.

The entire development is one accomplished by Standard Brands in collaboration with their suppliers. Permission will be given by Standard Brands to the other manufacturers for the use of the package on military and lend-lease orders and also for civilian uses on the basis of malt royalties for the latter uses.

The package is recommended for holding water-base liquids and oils. It will not hold acids such as vinegar. Corrugated board, 500-test, is used for the outer carton. So far, the package has not been designed for export. For such shipping conditions, of course, weatherproof (*Continued on page 148*)

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2. Corner of bag is revealed below short top flap and between two flaps on inside carton. Stamped line on corner of bag shows where to cut it open. 3. Carton is then held under the arm and desired quantity of contents poured out. 4. In the center is bag filled with liquid malt syrup. This fits into inner carton at left. Both fit in outer carton, right.

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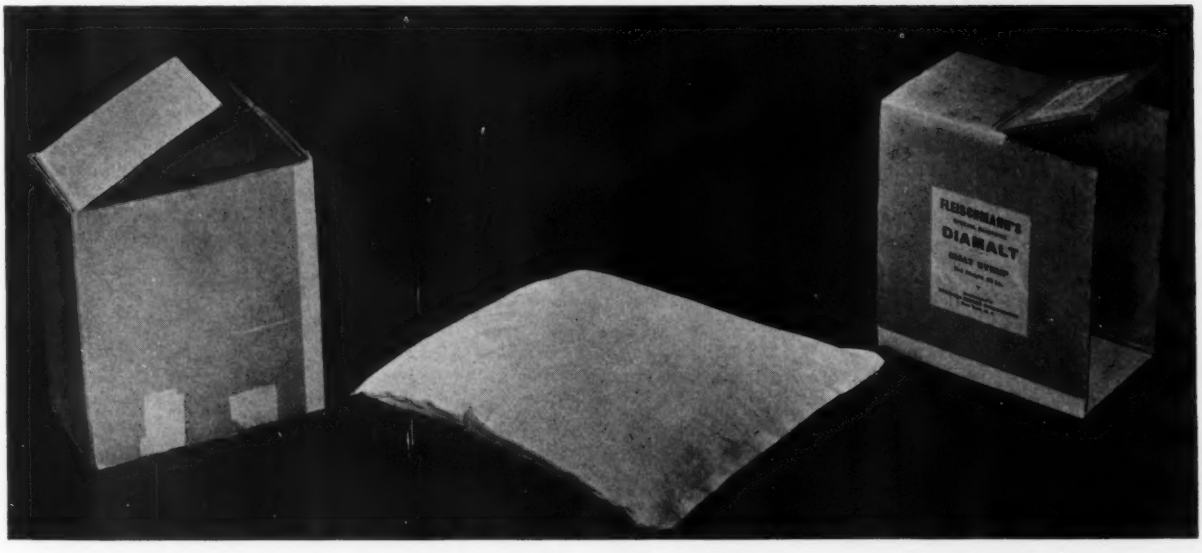

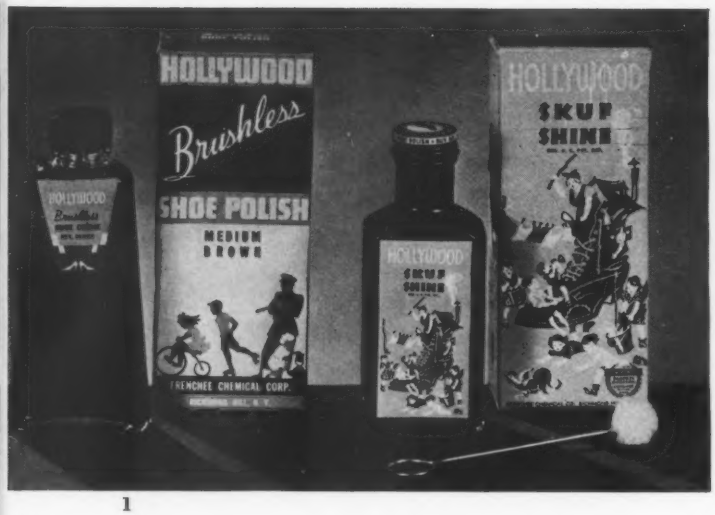

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Tailored for custom made shoe polish

Sometimes a small business is like a small, sturdy boat. It can adapt itself quickly to suddenly changing conditions and maneuver in tight places more easily than a larger, more unwieldy vessel. At least, that is what the Frenchee Chemical Co., maker of custom made shoe polishes, has discovered. Restrictions and limitations caused by the war have meant headaches for every manufacturer. The manufacturer must oftentimes change the production lines of an entire plant. Automatic machinery that worked with lightning speed and precision for one kind of product container often takes drastic adjustment before it can be adapted to a different, wartime container. For the large manufacturer, all these cpanges and adjustments are multiplied a hundredfold. For the small manufacturer, who has probably not had so much expensive machinery, is used to a certain number of manual production lines, and who is still making changes in his business, the quick changeover to manufacturing under wartime conditions often does not present the need for too many radical adjustments.

Thus, when the government said there was no more metal for shoe polish containers, the Frenchee Chemical Co. could go into glass with a minimum of disruption in its production lines. It was no trick at all for the workers in the plant to switch from filling tins to filling jars. At the same time, the company planned new and eye-catching cartons, labels and paperboard display dispensers to make the whole line of shoe polishes more attractive. This small, but well established firm met the special challenges of war with careful planning and ingenuity. As a result, the company feels that its new line of packages is better than ever.

The Frenchee Chemical Co. was started back in 1925 with "$100 and a second hand Ford car," according to Irving Sternberg, the president of the company. Mr. Sternberg was something of an expert in leather. He had worked in his father's shoe shop, had been a salesman for shoe polish and studied chemistry so that he knew about the dyeing and polishing of leathers. He became interested in creating special dyes and special polishes for shoes. From his experience, he came to the conclusion that different leathers demanded different polishes and dyes and he decided that he was going to create a business around this idea.

With the $100 in capital, he set up business in a bungalow on Rockaway Beach, near New York. He began to make dyes for the coloring of satin shoes which were, back in 1925, so popular with American women. He made the dyes himself and delivered them to his customers in the firm's jalopy. He experimented with a wide variety of colors, since women liked to have their satin shoes match their costumes. When he was trying out a new color, he would run a brush stroke on the wall somewhere and stand back to get the effect. The interior of the bungalow soon took on the appearance of a patchwork quilt. Finally, the business part of the household grew so large that there wasn't much room left for a home, so Mr. Sternberg moved his shoe dye business into a large basement nearby.

About that time, women changed their styles. They no longer bought so many satin slippers; but they were wearing patent leathers and white shoes in the summer. That was fine, because Mr. Sternberg, now the Frenchee Chemical Co., had just created a special polish for patent leather as well as for white shoes. He put up the polish, which was a kind of paste, in little tin cans, not very different from other polishes already on the market, and the white in a bottle with a metal cap. His labels carried very definite instructions about how to use the products. Because he was making a business of special polishes, Mr. Sternberg merchandised his products not through the syndicate stores, but through shoe stores and department stores. The polish, because it was of the type that a bootmaker would use and was manufactured as a quality product rather than a quantity one, had to sell for a higher price than the usual variety store range for such items. In display and in the labels on the containers, Mr. Sternberg put the emphasis upon the quality of his product. His selling was

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1. These cartons and labels for liquid polish for children's shoes have gay figures printed on them which illustrate in a dramatic way the purposes of the polish. 2. Black and white shoe polishes come in cartons which have illustrations of children on them. The one for baby's shoes has a back panel with copy describing the deodorant qualities of the polish. 3. Jars with lithographed metal closures represent a change from all-metal containers. The jars also have a tight inner seal which keeps the paste from drying out until it is torn off by the consumer. 4. A dispenser for the jars of paste, constructed to look like a shoemaker's shop, has cutouts in four sides of the dispenser.

directed towards those consumers who were particularly concerned, first, about the quality of the shoes they bought and, second, about the quality of the various aids which would keep fine shoes in the best of condition.

Gradually, the firm brought out new polishes—each one aimed at a definite need—until the present line of Hollywood Shoe Polishes, which is the brand name for the products, fills almost every shoe cleaning and shining purpose. The complete line is now manufactured in a modern factory in Richmond Hill, New York. Evidence of the steady growth of the company and of the increasing popularity of the custom made Hollywood products is the fact that the present plant of the Frenchee Chemical Co. is just about 25 times as large as the small store building which first housed the factory in Richmond Hill.

The Hollywood line consists of both liquids and pastes. There are a number of different paste types for adult shoes, including a paste for retaining the new popular "antique" effect on men's shoes. These had all been packed in tins until recently when the metal containers were changed to squat glass jars with screw-on caps. An inner seal is placed over the paste itself and firmly sealed around the edges of the jars to keep the product fresh until opened by the consumer. Labels for the jars are of coated paper, which is resistant to dirt and finger prints, and are lithographed in the color of the contents. This makes it easy for the clerk or the consumer to find the desired polish quickly. Another paste which also comes in a flat jar is the white shoe soap. A special carton has been made for it, which folds back in such a way that the jar fits into a die-cut recess for counter or other display purposes. All closures for the jars are lithographed with brand and product identification and colored to indicate the color of the contents, for convenient selection of polish.

A particularly attractive and cleverly designed display dispenser for the shoe polish jars has been created for use by dealers. The dispenser is made in the shape of a tiny shoemaker's shop and printed realistically with tile roof and half-timber, old English effect. Through a simulated window is the bootmaker himself, stitching on a pair of shoes. The shop sits upon a stilt-like structure with a platform beneath. Openings underneath each corner of the paperboard building allow for the filling of the shop with the jars of shoe polish. These are easily dispensed by pulling out the lowest jar at each corner. The display is sent to the dealer already set up and all he has to do is to fill it with the jars. Instructions for its use are printed on the bottom of the unit.

The line of liquid polishes are in bottles with screw caps. Labels vary with each of the different types, although the bottles are similar. Illustrations on the labels depict the product's uses, so that the consumer can easily find the liquid for his particular need. The Frenchee Chemical Co. calls these liquids, brushless. A dauber, either attached to the closure or packed in the carton with the bottle, comes with the polish. After application of the polish, no brushing is necessary to make the shoes shine. The polish just needs to dry and be rubbed with a cloth. Cartons have been designed in harmony with the labels on the bottles, illustrating the product use with drawings and other illustrations.

In addition to the Hollywood line of polishes for men's and women's shoes, the company has a Hollywood line of special crêmes for children's white and colored leather shoes. These crêmes are of the brushless type, are bottled and all have the special dauber applicator. On the bottle labels and the brightly printed cartons are figures of children, portrayed to indicate the ways in which the polish is to be used. Each of the crêmes serves a definite purpose (*Continued on page 150*)

Bellows box

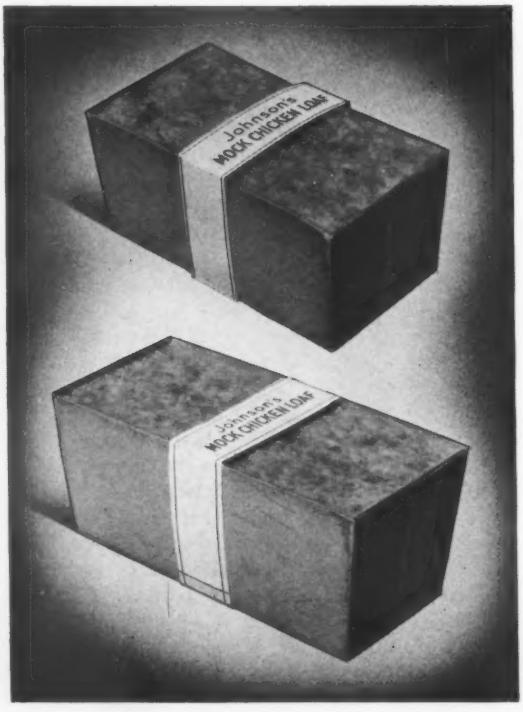
This new bellows-type cardboard container for Sno-Mist antiseptic deodorant has been introduced to the public for the major purpose, of course, to conserve rubber and metal which were used in the original atomizer-top container and at the same time to retain the consumer convenience of the spray-on feature embodied in the original.

When rubber and tin became strategic materials, The Phillips & Benjamin Co., makers of Sno-Mist, began to search immediately for a substitute package that would be equally efficient. As a result of the investigation the bellows-type box was developed. It is a flat, round box with slightly domed top and bottom. It is so constructed that the powder deodorant sprays out through a small white tube placed in one side of the top. This tube is covered with a red wax seal which must be removed before the powder may be dispensed. To remove the red wax seal, the consumer simply pierces the wax with a pin and lifts the seal off. When it is removed, the powder may be sprayed by pressing and releasing gently the sides of the bellows box. The box is white, printed with brand and other identification in blue. A blue and white striped label runs around the sides with directions for use of the box and the powder printed on a blue panel on the side just below the tube for spraying the powder.

Twelve of these consumer packages come in a blue and white carton. The die-cut top folds back to make a display piece for the carton. A line drawing at one side illustrates how to use the box. Price of the powder is spotted at the right of display panel.

Credit: Box by The Waterbury Paper Box Co.

☆ ☆ ☆ DESIGN HISTORIES ☆ ☆ ☆



Paper loaf pans

Many packers and provisioners today are faced with a shortage of metal pans used for putting up souse, scrapple, sausage and a variety of other loaf specialties. With the rationing of meat, civilians will probably be more and more interested in many of these loaf combinations which can be bought in small quantities or which may not come under the first general rationing. Packers, therefore, want to find substitutes for the metal pans that have been used to pack the products.

As an alternate container for this purpose, a leakproof paper loaf pan has been developed. It is constructed entirely of paperboard. It is made of a heavy weight stock and specially treated with a solution which enables it to withstand higher temperatures than permitted by ordinary paraffin or wax, the manufacturers of the pan state.

These pans are available in 3-lb. and 6-lb. sizes and closely resemble the former metal containers. Johnson's Mock Chicken Loaf is packed in this way. There is no product or brand identification printed on the pan itself, but a printed band of paperboard stock is placed about the center of the pan and is printed with this information.

Not only are these pans effective alternates for the metal pan, but they have an advantage for the storekeeper—they may be discarded when they are emptied. Usually the store or meat market manager had to return the former metal pan to the packer or provisioner. This entailed extra work and in these days of personnel shortages, a detail which can well be eliminated.

Credit: Paper pans by Sutherland Paper Co.

Victory pour spout

Wilco Co. manufacture a line of specialty items including a lighter fluid, an odorless and smokeless fluid for use in all types of mechanical cigarette lighters. Formerly, the item was packaged in a 3-oz. metal can equipped with a lead pour spout. Wartime conservation order prohibited the continued use of the cans for packaging this product and the company changed over to a 4-oz. glass bottle. The problem was how to help the consumer fill a tiny cigarette lighter from a wide-mouthed bottle without spilling and without waste.

By cut-and-try methods and with some experimentation, the Wilco Co. developed what it calls its "victory pour spout." It is a very simple device—merely a ring of tough, treated paper which fits around the neck of the bottle just under the cap. Printed instructions on the cardboard ring indicate that it is necessary only to loosen the cap approximately half a turn and then tip the bottle, which allows the fluid to run slowly off the pointed spout into the small filling orifice of a cigarette lighter. There is no waste and no evaporation of the fluid while filling the lighter, since the bottle cap is never completely removed.

Red and white are used for the color scheme on the bottle label and the paper spout. Although no special design was created for the bottle, the company chose a standard type which is well proportioned and well balanced. It will not tip over easily and it is of a size which fits the hand well, which facilitates convenient pouring from it.

Credit: Paper spout and bottle label by Western Label Co. Bottle by Glass Containers, Inc. Metal cap by Phoenix Metal Cap Co.

☆ ☆ ☆ DESIGN HISTORIES ☆ ☆ ☆

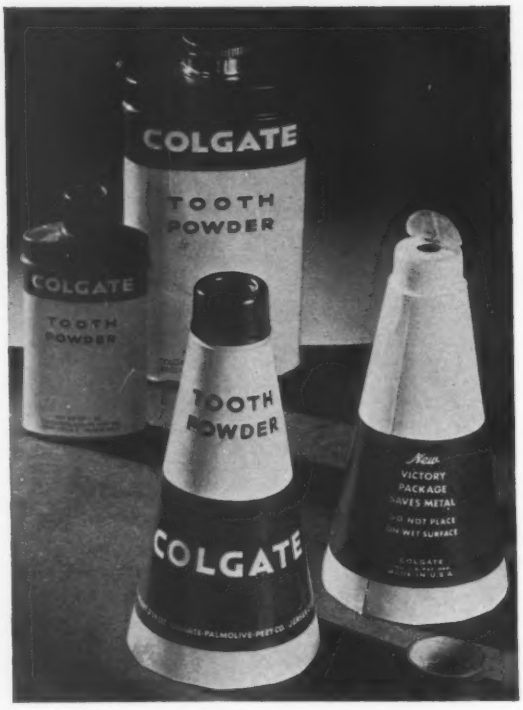
Plastic razor box

The United States Army, which is equipping its men with the most up-to-date of everything, is starting to issue a new all-plastic razor in a plastic box. Razor and box were designed and are being manufactured by the Federal Razor Blade Co., makers of Simplex and Shelby blades.

For the army men, this razor will be issued as part of their standard equipment, packed complete in its plastic box with a package of five double-edge razor blades. Savings in weight and metal with this new shaving package are very large. This makes the razor easy to use and the entire package light to pack and carry. The razor weighs but $^3/_4$ of an ounce as against 2 ounces which is the weight of the average metal razor. The average weight of metal boxes is between 5 and 6 ounces, whereas the plastic box weighs approximately $1^1/_2$ ounces. To the man in the services who must carry his personal belongings as well as his fighting equipment, every saving in weight means a great deal.

Razor and box are non-corrosive and this fact makes it much safer from a health and possible infection angle. These characteristics are naturally of importance to the civilian as well as the soldier. When possible, the new razor and box will be made in an assortment of colors for civilian distribution. Because of their extreme lightness and the hygienic qualities of the plastic materials, it is expected women also will like the pack.

Credit: Material for razor by Bakelite Corp., molded by Consolidated Molded Products Corp. Material for box by Tennessee Eastman Corp., Monsanto Chemical Co., Plastics Div., and Manufacturing Products Co. Molded by Arpin Products, Inc.



Tooth powder cone

From metal can to all-paper cone is the conversion story on Colgate's tooth powder. The former can was the familiar type frequently used for talcum powder and other dry powders of various kinds.

Colgate's new package design was derived from the core of a ball of string. In many grocery and other stores these large, truncated cones of string are well-known sights. The core is of fibre, spirally wound, and this is precisely what the Colgate tooth powder container resembles. Its shape prevents it from tipping over easily and it was designed to fit the hand and pour from the top. The construction is very substantial so that the container will give as long service as necessary. There is also a special glassine seal over the top, which protects the powder from dirt or particles and affords flavor retention. The glassine seal must be punctured before contents may be dispensed. Labels are applied after the container itself is formed. There is a special, protective coating of varnish which is applied to the outside of the label after it has been placed on the container. The label is made of a type of paper which is resistant to alkali.

An intermediate step in the Colgate package is of interest in that the former metal can for a brief period wore a cap of paper. A manufacturer whose closures for dry powders become suddenly short before he has completely converted his packages, might find this device effective as an emergency measure.

Credit: Paper cone by Sonoco Products Co. Labels by National Label Co.

☆ ☆ ☆ DESIGN HISTORIES ☆ ☆ ☆

Paper spout for salt

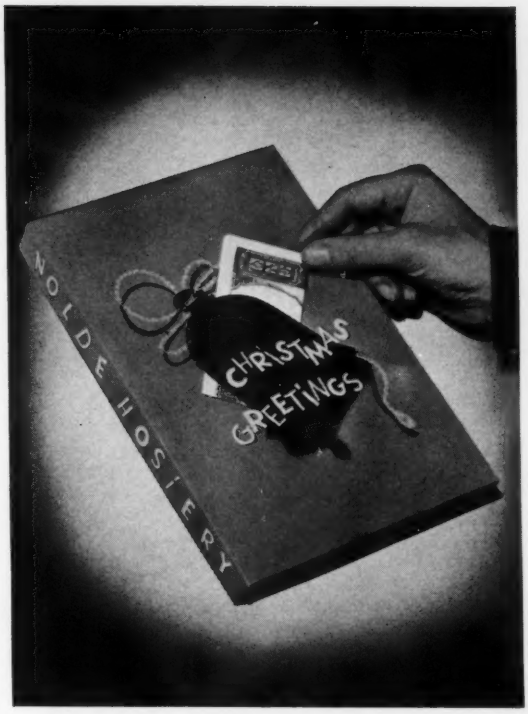
Faced with the need for conserving critical metal, the Myles Salt Co. developed the unique pouring spout which is now used on its E-Z Run package. Consumers had become so accustomed to the convenience of the former aluminum spout that the company realized it was very necessary that a substitute spout as near like the old one as possible should be worked out. This new paper spout that was arrived at after considerable experimentation operates with the convenience of the old and is remarkably sturdy. A diagram of the spout is shown in the photograph. It appears much the same as the familiar aluminum one and is used in the same way.

The fibre can is rather unusual. It is hexagonal in shape which makes the container easy to grip in the hand and less hard to hold than a rounded surface. The many straight sides afford convenient surfaces upon which the hand can get a hold. The size of the container as well as the shape has been considered so that the can fits the hand comfortably for quick and easy dispensing of the salt.

The whole package is, of course, entirely of paperboard. The can is tight wrapped in an attractively printed paper with a glossy finish for appearance and for protection against dust and finger marks. Less shipping space than a round container is used by the new fibre can as well as less shelf space. It also provides maximum shelf display since each one of the facets has some distinguishing identification.

Credit: Fibre can and spout by Container Corp. of America.

Hosiery box



An inexpensive gift box for hosiery is used by The Nolde & Horst Co. Not only does the box use no essential materials, but a clever cut is made on each side of the Christmas bell on the wrap so that War Bonds or Stamps may be inserted. Since most of the department stores have booths where these bonds and stamps are sold, the customer can very readily purchase her complete gift package in the same store. The convenient and attractive way of giving bonds or stamps suggested by the design of the box itself is effective in helping the national program towards this type of saving and gift giving.

The base of the box is of plain cardboard with the corners held together by pieces of adhesive paper. The lid of the box is loose wrapped in a bright red paper with product and brand name in white along the side and a Christmas decoration in black and white on the top.

The illustration of the bell on the top of the lid is cut around each side, just enough to allow for the insertion of War Bonds or Stamps. The box makes an interesting display piece and its use can be tied into a number of patriotic themes that the majority of department stores are currently using. The loose wrap, which really makes the box a holiday gift package, suggests that many manufacturers will find this means an effective one for dressing up their regular boxes for holiday seasons. At the same time, with clever devices for the insertion of bonds and stamps somewhere in the wrap, the package gains added attention and opens up a wide range of display opportunities.

Credit: Designed by Ariosto Nardozzi. Wrap by Brogle & Co.,Inc.

☆ ☆ ☆ DESIGN HISTORIES ☆ ☆ ☆

For pipe lovers

Two gift boxes have been brought out by Christian Peper Tobacco Co. for those men who like to smoke a pipe. "Peper's Autograph Selection" combines seven of the tobacco mixtures, packed in a handsome, wood-grain effect, hinged-lid box. The box is so constructed and designed that it may be used for many other purposes after its contents have been removed and enjoyed by the smoker. Although the box is made of a high-quality cardboard, the effect is that of a grained wood. The extended base also adds to the solid, wood-like appearance of the container. The inside is finished in glossy paper.

"Peper's Famous Five" combination contains choice high-grade mixtures, accepted generally by pipe lovers. This carton has been specially designed to simplify mailing by dealers. It does not require wrapping, but may simply be addressed to the man at the Front or anyone for whom the gift is intended. In this way all extra wrapping materials are eliminated. Without sacrificing good appearance, the construction of the carton is of sufficient strength to withstand more than the usual amount of rough handling. The front panel carries a facsimile in color of the packages assembled within. This enables the consumer to identify readily the contents of the package. The back panel carries space for mailing address.

The company has planned and designed these gift packages with care and, as a result, they are of the type that dealers will like to use as product display packages.

Credit: "Famous Five" carton by Mott Carton & Paper Co. "Our Autograph Selection" box by W. C. Ritchie & Co.

Syrup in glass

1

2

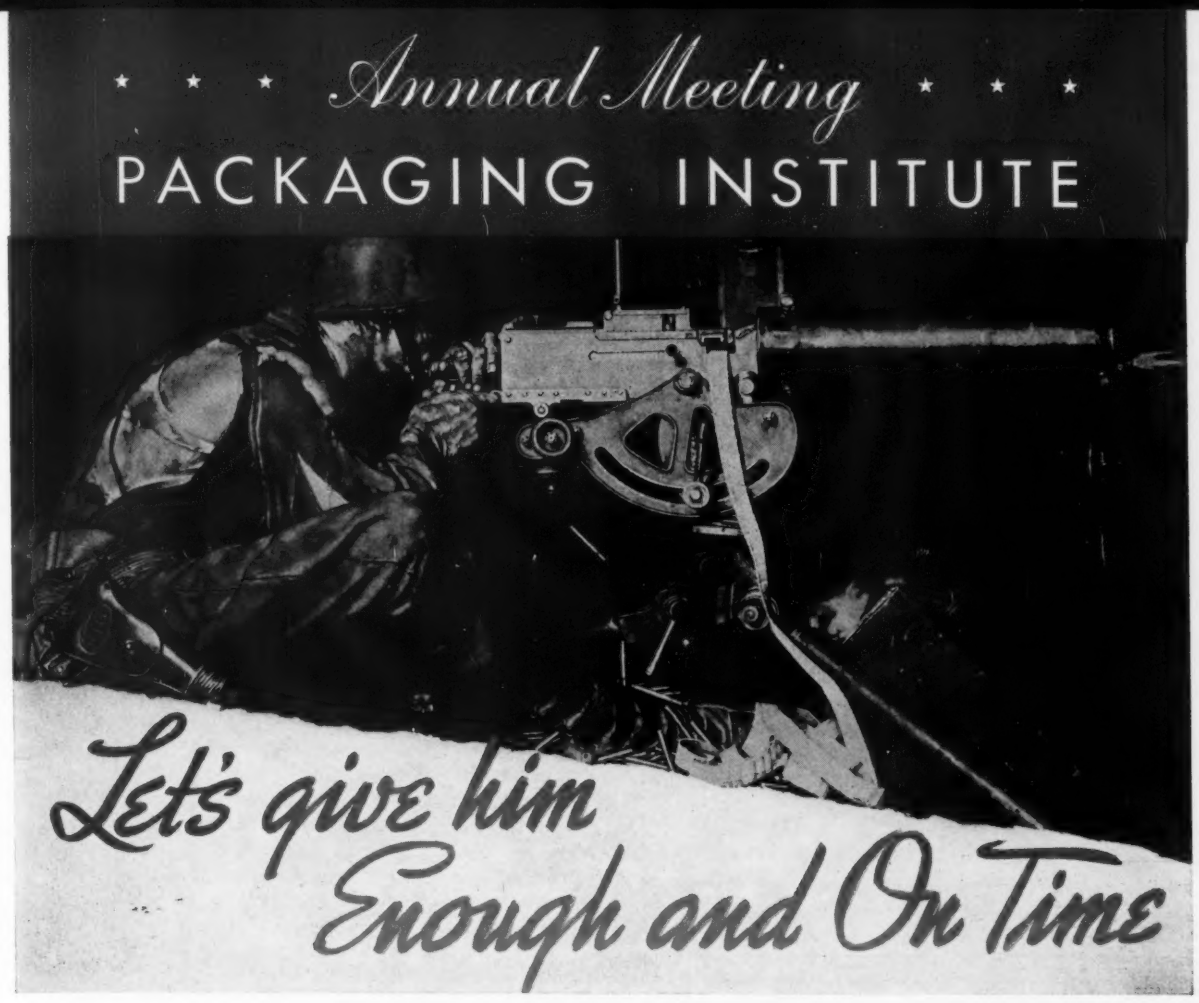
3

A glance at any of the food pages in the daily newspapers reveals the increased popularity of syrups and molasses of different kinds. Rationing of sugar has spurred on home economists and dietitians to devising interesting recipes in which molasses or syrup is substituted for sugar or these ingredients are used in new ways in the family menu. Medical people have not been slow to point out, either, certain nutritional advantages to be gained by using various syrups and this has helped to popularize them in many sections of the country where everyday use was not a common thing.

But syrup and molasses must come out of their familiar tins and go into containers that use much less and, if possible, no critical materials. With the demand for their syrups increasing, producers have made changeovers as speedily as their production lines would allow. It is true that further limitation and restrictions in containers and closures by the government may call for still further changes in these newly adopted bottles, jars and jugs. The manufacturers, however, who have gone from tin into glass feel that this first radical change is probably the greatest and that, if necessary, adjustments may be made later without too great disruption in production. For example, some of the wide-mouth jars which use large metal closures may have to give way to smaller-mouthed jars whose caps use a minimum of metal. Bails on the milk-can-type jars probably will have to be eliminated. Bottles molded with certain decorative features will no doubt have to be simplified when current molds have worn out. These are some of the conservation measures that will probably go into effect later. Now, many current glass syrup containers embody (*Continued on page 148*)

1. New and old package for Turkey Brand table syrup shows great saving of critical metals by the 13½-oz. economy jar. However, wide-mouth may later give way to smaller jar opening. 2. Golden Oak goes from a bucket to jar with bail, which later may be eliminated, if shortages increase further. 3. From can to bottle for Red Hen molasses. Exactly the same label was retained on the bottle. 4. White Oak syrup now comes in new glass jug.

4



The powerful message behind this WPB poster by Norman Rockwell dominated the thought of the entire conference.

Résumé of wartime conference proceedings

Earnestly and seriously, members of the Packaging Institute met for their annual meeting, November 5 and 6, at the Hotel New Yorker, New York City. Every session and every panel discussion was dominated by one towering thought: "We must win this war; nothing else counts."

Officers re-elected for a term of one year were as follows: president, Joel Y. Lund, vice-president, Lambert Pharmacal Co.; vice-presidents, A. Vernon Shannon, sales manager, Westfield River Paper Co., and Wallace D. Kimball, first vice-president, Standard-Knapp Corp. Each division of the Institute elected two directors to serve three years: Production—William O. Brewer, Calco Chemical Division, American Cyanamid Co.; Charles A. Southwick, Jr., General Foods Corp. Machinery—H. Kirke Becker, president, Peters Machinery Co.; Morehead Patterson, president, American Machine & Foundry Co. Supplies—David S. Hopping, director of sales, Celanese-Celluloid Corp.; F. S. Leinbach, Riegel Paper Corp., and now with Packing and Packaging Branch, WPB. Mr. Southwick was elected chairman of the production division and Hal W. Johnston, Stecher-Traung Lithograph Corp., chairman of the supplies division.

Abstracts from the conference proceedings are as follows,

THURSDAY MORNING

Presiding: Charles L. Barr, vice-president, F. B. Redington Co., Chicago, Ill.

The Wartime Packaging Picture—JOEL Y. LUND, vice-president, Lambert Pharmacal Co., St. Louis, Mo., and president, Packaging Institute.

There are really two definite sides to packaging, the marketing side—which includes design, problems of consumer likes and conveniences, in fact everything that goes into pleasing the customer—and the technical side, which has to do with materials, machines, problems of protection of the packaged material from all sorts of conditions, operating techniques, manpower to run the plants, etc. Of course, both sides are interrelated, but they are distinct, nevertheless.

The AMA has been principally concerned with the first side, as shown by the fact that their packaging meetings are tied in with their marketing group. The Packaging Institute is concerned with the technical side. In the past, the Packaging Institute has been concerned principally with the so-called finer points of packaging technique. But under present

wartime conditions this is completely changed. In many cases our good machine operators are gone and if they haven't gone yet, we will probably lose them eventually. We at Lambert consider the matter so serious that in our St. Louis plant, where we are running both war contracts and our regular products, we have taken all able-bodied men of draft age off of our packaging lines and put them on essential war work. We can't run production lines without materials to package in, so the next step is to find out what's available, and what restrictions there will be on the use of such materials. Headquarters for this information, of course, is the WPB, particularly the Container Division.

And that brings us down to the real problem, just how can the available materials be utilized to accomplish the proper results? If you are a technical man who must give final approval to a package, or material, be very careful to be exacting in outlining just what that package or material will do. Even at the risk of being considered a pessimist, focus attention on the weak points and, if necessary, dramatize them to be sure they are properly understood.

Then, there's the other side of the matter. We have been accustomed so long to have perfect protection, in cans or glass, or other materials, that there is a tendency to write specifications for substitute containers that say, in effect, "just make a paper package that is equivalent to a glass bottle or tin can and we will be satisfied."

The government, of course, is doing the only logical thing, that is, setting up rigid enough specifications to be absolutely certain that the materials reach their destination in proper condition. I believe, however, that subsequent investigation will show that many of the items are over-packaged; that a study based on actual protective requirements will indicate simplifications that will not only greatly aid in the necessary rapid production of the items, but will save materials for other uses where they are absolutely necessary and materially decrease the costs.

Also, it seems, the WPB regulations have gone too far in prohibiting the manufacture of packaging machinery "for the duration." Properly designed machines not only decrease the costs but also make much easier the tremendous production capacities that are necessary. This will be a more and more important factor as the labor shortage increases.

There are a multitude of civilian packaging problems on which members of the Institute can work together. This can best be done through committees of Institute people to work on specific problems. Take the collapsible tube situation, for example. Just about a year ago restrictions were coming thick and fast. A joint committee was set up with the Collapsible Tube Manufacturers Association to work on the problem. It was obvious from the start that since the collapsible tube industry in a large measure furnished packages for non-essential products, it would be among the first to be restricted in the use of tin. Instead of fighting this decision it was realized that this was best for the public interest, so the industry cooperated 100 per cent with the WPB in working the matter out, even to the point of helping the Tin and Lead Branch determine how we could do with even less tin than we might have been allocated.

We went even further. Realizing there were large quantities of tin in used tubes on druggists' and users' shelves, we set up another committee (out of which came the Tin Salvage Institute) to try to get these tubes back.

Practically everyone in the industry agrees that without action of this sort there would have been little or no tin for non-essential tubes after the first quarter of 1942. The use of tin-coated tubes and possibly lead tubes brought up the question of lead absorption into the product. Another committee of research men was set up under the leadership of Mr. Egan of Colgate Palmolive-Peet Co. which worked out standard methods of testing in conjunction with the Food and Drug Administration, and started long-time tests to determine just how much lead was absorbed. Thanks to this work, we now know just about how much lead will be absorbed into different types of products under various conditions. Part of this work had to do with protective interior coatings so we now have a year's background of experience to show us which coatings are the most satisfactory.

In an investigation of the problem of lead toxicity, it was found that there had never been a complete bibliography made of all the references on toxicity and lead poisoning. About 15 companies agreed to participate in the expenses, and under the direction of Mr. Egan and particularly Miss Randall, Librarian of Colgate Palmolive-Peet Co., who spent a great deal of time on it, an experienced librarian was employed who spent six months working—looking up all of the references that could be found. The complete report will probably take some 400 to 500 pages. Over 5000 references have been tabulated covering a period from 1745 through the middle of 1942. These references are not limited to collapsible tubes but cover all phases of lead toxicity and should be of value to any company that has this type of problem. Mr. Johnson's Committee on Packaging Research is working on a similar job, principally concerned with dehydrated foods.

As problems appear, committees will be set up to study them. We have a big job ahead and the more talent we can get the better the results will be.

Greater Quantities of Quality Products in Less Time—

CLIFTON COX, assistant director, Training Within Industry Division, War Manpower Commission, Newark, N. J.

Actually all of us who are engaged in the Training Within Industry Branch of the War Manpower Commission come from industry. We are industrialists and are trying to operate to provide a training plan that industry can use.

American industry has been handed a terrific order. In fact, it is a 200-billion-dollar order. Every person in this room has a serious responsibility in connection with that order, because that particular order calls for our turning out the fighting supplies, materials, foodstuffs—as well as toothpaste—that the relatives and friends, the fellows who worked with us yesterday and last week and last month, have to use in order to win the war.

Therefore, this 200-billion-dollar job that we have been given just must be accomplished. It has to be completed right now. Industry and the packaging field have been doing a swell job, but we must do a much better job from here on out. We are faced with a pretty tough situation. We are faced with an acute shortage of manpower, of machines and of materials to work with.

The problem of manpower is not going to get any better. It is going to get worse, if anything. They are going to take more and more men into the Army. They are going to draw them from our plants. The materials that have been going into the making of machinery are going into the manufacture

of tanks and planes and guns. The sources of raw material products, such as tin, rubber and some others, have been seriously cut off. We are asked to double and redouble our production, in spite of an acute shortage of manpower, machine capacity and materials.

What other "out" do we have then, than to do our very best to make better use of the things that we now have available in the way of manpower, machines and materials? The training program is aimed particularly at helping industrial manufacturers to solve that one special problem. The training program is not a shotgun blast by which we hope to cure all the problems that are coming into the manufacturing industries today. By its own definition, we say that this particular training program is a short, intensive 10-hour training program, that will help your foremen, supervisors, gang bosses, lead operators and, in many cases, perhaps, the direct operators themselves, to develop and apply practical improvements in the operating methods that they are using—so that they can then help you both produce and deliver greater quantities of quality products in less time and do that by making better use of the manpower, machine capacity and materials that are now available. If we can accomplish just that one purpose, you and your people will make a major contribution to victory.

Why do we need a training program of this type? We are doing a pretty good job. Over in New Jersey we have serviced over 850 plants. We find that the large majority of those plants are doing a good job. But that job is not quite good enough; it must be better.

The surveys that we have made covering a large number of plants indicate that three things are happening that we can do something about. First of all, the average plant is wasting anywhere from 30 to 50 per cent of its present manpower; about 40 per cent of its machine capacity; and about 35 per cent of the materials that are going into one end of the war production job and coming out at the other end of the war production job on the scrapheap, as scrap and defectives that are thrown away.

All of your plants may not be as bad as the figure I have mentioned. Your waste factors may not be that high. But, whatever the plan is, there is some waste of those three important factors in the operations. Doing your share of saving by having your people improve their job operating methods so that they can make better use of manpower, machines and materials that are going into your products, will certainly do a whole lot to help us in the war effort.

The purpose of the training program is not to make a lot of experts, industrial engineers and methods engineers out of the foremen and supervisors in the plants. We want simply to provide them with a practical plan that they can use—a track to run on. We do not want to go to the foremen and supervisors and ask them to make the operators work any harder or faster. We do not want them to speed up operations, as we usually understand the speed-up. That just gives us bad work, causes accidents and starts a lot of trouble. It is the purpose of this training program, however, to get these people to increase production, but to get that increased production by eliminating those parts of the job that are unnecessary and to make the parts that are necessary a whole lot easier and safer to do. It is the purpose of this training program to get the foremen and supervisors to do some constructive thinking along the lines of improving the jobs that they are doing with the men, equipment and materials that they have available to do these jobs.

Where can it be used? Every single plant in the United States has some possibility of making savings of these three factors that I have mentioned, whether they are good plants, bad plants, perfect plants or those that are indifferent to the war effort.

When shall we do this training? My answer is that whenever you get started, it is already too late; but better be too late than never do it at all. If we completed the total training program that we have in mind on this particular subject, which would be extending the training to some 400,000 or 500,000 foremen and supervisors across the country (and, incidentally, that is not too high a quota to set), imagine what it would mean to have 500,000 foremen walking into plants tomorrow morning with just one new idea for improving some job method! The foreman and the supervisor are the men who are close to the job, and who know how the job is being done today. They are the fellows who can find out all the details that go into making up that job. That particular class of individual is just bubbling over with thousands of ideas. They lack just one particular tool and that is a practical plan that will help them develop and complete their idea, make it into a working improvement, clean it up, make sure it is a good one and hand it to you in a style where it is ready to put into effect and ready to use.

Now, how shall we go about providing these formen and supervisors with a practical plan that they can work with? We must first provide them with the principles or means of attack that one should follow in trying to improve a job method. The way we have found successful is to get these fellows together in small groups of 10 or 12 at a time and to split up the intensive training of 10 hours into five 2-hour sessions. In the first of the 2-hour sessions, give the men the principles of the plan. Then, in the second, third, fourth and fifth of the sessions, have them put the plan to test and learn to do the job by actually doing it.

This training program has been set up so that in the four last 2-hour sessions, these boys are given a chance to learn to use the principles by actually using them, by actually doing jobs themselves, in which they bring in a demonstration of the way a job is being done in the shop today and then show the group what they are going to do to improve that particular method.

Also in those sessions we give them some coaching and some constructive criticism. If there is a group of 12, we let the other 11 fellows criticize the one fellow who is putting on a demonstration. We get a pooling of ideas and of their thinking. Another thing we need is the complete cooperation and support of top management. If we do not have that right at the beginning, we cannot even start the training program.

A plan that we are offering and have offered to something over 100 plants in New Jersey already is called, "Job Methods Training." The purpose of it was to provide them with a practical plan that would help them produce greater quantities of quality products in less time, by making the best use of the manpower, machines and materials that are now available. We give them four steps to follow in the plan: (1) Break down the job. (2) Question every detail. (3) Develop the new method. (4) To apply the new method.

In the first step we ask them to take the job the way it is already being done, to follow exactly the method that is being used today, and (1) To list all the details of the present

method. (2) We ask them to include in the breakdown the material handling, machine work or hand work, or any combination of these three that go into making up the completion of that particular job.

To break down a job is not a new principle. The only novelty we claim in this type of breakdown, in following step 1, is that the foremen now are to use simply a list of details

and no technical tool. Many of us have heard of the technical tools of the industrial engineer. They are fine for the technician, but experience has taught us that the foreman just has not time to apply those technical tools and particularly so now, when he is a very busy individual. We find that the foreman has a big advantage in attempting to follow the other steps if he first makes a list of the job details the way it is being done. This does not provide the improvement itself, however. He must go on from there and follow step 2.

Step 2 is to question every one of the details that he has put down on the breakdown sheet. Why is it necessary? What is the purpose of this detail? Where should it be done? When should it be done? Who is best qualified to do it? And then, last, how is the best way to do the job? In this step, what the foreman is doing is gathering information about the details that he has listed here. He is finding out a lot of things about these details that he thought he knew but that, actually, he did not know. When he has that information, he is then ready to go on to step 3.

Step 3 we call developing the new method. He tackles that by a procedure that has been pretty commonly used by industrial engineers and so-called methods experts for a good many years. From the information he gets in questioning all the details, he is able to say that No. 1, 2, 3 or 4 are not necessary. So point 1 here is to eliminate all the unnecessary parts of the job.

Point 2 is that we can now perhaps combine or rearrange certain other parts, putting them together or turning them upside down, to get better use of the manpower of machines and materials that are going into this job.

Point 3 is rearranging.

Point 4 is to simplify the job.

This is not a technical process. It can be boiled down to three or four principles. They do not need 38 laws of how to do it, but just two or three basic principles. One of the most important that we have found so far is the foreman's job of getting the operator to use both hands on a piece of work.

We suggest as point 5 that they work out their ideas with other people—the boss above them, the operator below them and their assistants on a parallel line.

Point 6 is some specific coaching on writing up the proposal. It should not be a 32-page proposal that the boss won't read and will simply throw in the wastebasket, but a short and snappy statement of what the foreman wants to do and exactly how he wants it done.

These foremen and supervisors need some extra coaching in the following:

1. How to sell the idea to the boss.

2. How to sell the new method to the operators. If the method is sold to the operators and they are told why it is necessary to do it a particular way, they will like it and use it and probably will add to the suggestions for the improvement to be made.

3. Sometimes the foreman bogs down on the matter of getting final approval on safety, quality, quantity and cost.

Point 4 is to put it to work. Procrastination probably has stopped more good ideas than any other one thing we can think of.

Point 5 in getting new ideas and methods into practice is to give proper credit. We put it rather bluntly to the foreman by telling him that just one stolen idea will stop all the other ideas coming from his department and from the people who work for him, probably from the whole plant. We sell the foreman on the idea that stealing somebody's idea is just as much an act of sabotage as walking into a plant with a lighted bomb.

Those four steps are the principles of the plan we offer. We have tried this out in over 100 plants in New Jersey and have trained between two and three thousand foremen and supervisors. We did some experimental work at the beginning, but this work is on a production basis.

We had some ideas of what results we were going to obtain before we started, but those standards of results have just been shot to pieces. We did this training in a wide range of plants. We tried to get the whole breadth of the field of industry to see what would happen, one way or the other. We have taken small plants, large plants, medium-sized plants, process industries, those who are making a single product and those who are on a job shop basis.

Among a few of the report sheets that have come in from our trainers who are out in the field conducting these training programs for the foremen, is one from a plant that is claimed to be among the first five most critical plants in the United States. The program was given to 30 men in three groups of 10. They are called job setters. In this particular plant they do not have foremen or supervisors. They call everybody in a supervisory level a job setter. Twenty-seven out of the 30 men turned in ideas that would increase production. The other three turned in ideas that increased the use of material or improved the quality of the product, only.

The first fellow on the list increased his production 133 per cent, saving 10 per cent of the material on the job. The next fellow increased his production by 200 per cent. The next fellow, 110 per cent. The next one, 50 per cent, with 45 per cent decrease in breakage or spoilage on the job. The next fellow had 180 per cent increase in production and a 50 per cent decrease in breakage, with a wind-up of the top of all tops—by the use of an acetylene torch instead of a saw for cutting on a production job, the production was increased 1,000 per cent.

The General Cable Company sheet indicates that one fellow made a 25 per cent increase in production, with a saving of 25 per cent of machine capacity on the job and a saving of 4,000 feet of cable, in a day.

Another report that came across the desk this week was from a company that pointed out a saving in floor space. That is important to all of us today. The present method uses 3,000 sq. ft., and the new method uses 700 sq. ft. The old method uses 15 men, and the new method uses 12 men. The old method uses 8 drill machines; the new method uses 3 drill machines. The old time was 17 minutes; the new time is 5 minutes.

Why are we able to get these results from the foremen and supervisors? We have gone to them and asked them to help us and they said they would, if we would show them how.

What we are doing now is to show them how they can help us. They certainly are producing. And they are doing the job themselves. They are doing it with their own plan. They are not depending on an expert. They have become the practitioner of doing the job and doing the thinking, as well as the working, themselves.

Training Within Industry Division of the War Manpower Commission is a government agency and provides this training to war industries only, without cost to the war industry itself, on the same basis that many plants have received the job instructor training program during the past year. The job methods training is offered on the same basis.

H. H. LEONARD (Buffalo, N. Y.): As I understand it, the War Manpower Commission is establishing offices in various important cities. I understood also that this training program was going to be conducted by these local offices.

Are the local offices going to do this and may we be assured of competent instructors?

MR. COX: The War Manpower Commission operates out of 23 districts now. There is one in Washington and the other principal districts are in such cities as Boston, New Haven, New York City, Newark, Philadelphia, Baltimore, Indianapolis, Chicago, Detroit, and so forth, around the country. We are just in the process of spreading this program from coast to coast. We have three men working in three different sections of the country.

Our trainers come from industry. They all will be practical men who have spent anywhere from five to seven years in industry and they will be given a standard package to deliver. Every one of the trainers will be able to stimulate thinking along the lines I have presented and the service will be available to every war production company in the United States within the next couple of months.

CHAIRMAN BARR: Where may an inquiry be directed for the service?

MR. COX: Directly to the War Manpower Commission office in your own district. You will find that you can get information through that office, or through the War Labor Board in your own district.

Woman in Industry—ELLEN M. DAVIES, Personnel Manager, Chase Brass & Copper Co., Waterbury Mfg. Co. Plant, Waterbury, Conn.

When our company was first founded, in 1837, among the first employees were women. We have had women ever since.

Perhaps some of you may feel, now that women have been introduced into some of the so-called men's industries, that you are more at home, just like that machinist did out in the shipyard in Portland, who said, "Now that the women are here, I feel at home. I have been bossed by women all my life." I don't believe that women are going to do much bossing in industry, but they will help you with the tremendous problem of where to get the hands and the brains and the spirit to put this war job across.

A communication which came to us the other day from Henry L. Stimson, the Secretary of War, reads as follows:

"In view of the heavy requirements for personnel suitable for military service, it is essential that immediate action be taken to provide for the replacement of male workers who may be inducted into the armed forces. Serious interruption in production will be the inevitable result of failure to take adequate action in this respect.

Women routing and drilling brass parts on drill presses.

"It is suggested that contractors adjust their procedures, policies and working methods in such a manner that women may be employed to the maximum extent compatible with efficiency. This will necessitate careful reappraisal of employment and production processes and cannot be considered solely upon the basis of present operating conditions. Full attention should be given to the development of training programs.

"The ability, the spirit and the determination which women war workers have already shown can leave no doubt of the part which they are playing and will play in this war. War Department employing and training officers must take the necessary steps to fully utilize, immediately and effectively, the largest and potentially the finest single source of labor available today—the vast reserve of woman power."

In thinking about this reserve of woman power, I would like to have you feel that you are including four classifications or varieties of woman power. (1) The group of women who are traditionally finding their ways into jobs in industry, in stores and in offices. There has always been that group as far back as we can look into our industrial history.

(2) Then there is the group which was not very welcome even as recently as five years ago. That is the group of older women. These women who, for one reason or another, are available now, have raised their families or are, maybe, retired schoolteachers or ex-secretaries who were thrown out of work when the depression hit them the hardest. That group of women is something you should keep in mind when you are looking for your leadership people.

(3) Another class of women are those who have not been welcome at all, for the most part, as a group, and they have been a minority group in the employment picture. I refer to the group of handicapped people (and that includes men, for that matter)—one eye, no sight at all, a short arm, a paralyzed leg or ankle or foot, a back that is not quite straight. These people present to you as employers a sort of compensation problem—perhaps a little bit reduced area of activity.

(4) The last group is perhaps the dynamite group, and maybe you are guessing the group I am going to name. It is the group of colored women, who have not been permitted, in many instances, inside of our factories and plants. They have taken advantage of the government training facilities that have been provided for all of our people. If you want a group of good, all-round Americans, you can count on the colored persons. Now, there are plenty of problems that go with the introduction of colored people into your plant. Each plant has to take its own situation and act in accordance with what is best for it. But I speak from experience when I say that the finest thing that has happened to me as an individual in the last year and a half has been the knowledge that comes from practicing democracy by introducing colored workers into our plant.

In almost every factory where men are employed there are some women employed and in some kinds of establishments there are many more women than men. ("Women in Industry," Bulletin 164, U. S. Dept. of Labor.)

Of the role that women played during the last World War we have a dramatic picture. The first World War proved that women could do work that no one had ever believed they could do, and their substitution for men in carrying through a national emergency broke down many prejudices against their working, and changed ideas as to the types of work they could and should do. ("Women at Work," U. S. Dept. of Labor.)

The novelty is not that they are in jobs, but in the kind of jobs. In Alberta, Canada, on September 11, 1942, 10 women were working together shoveling gravel and moving lumber at the new hangars being built by a local construction company for a repair depot. Two of them were working with the truck drivers; the others were leveling gravel.

In Kansas City on the same day women were reported to have been admitted to membership in the A. F. of L.'s Boiler-Makers' Union. The action was taken because of the urgent need for workers in the huge shipbuilding program.

At Wilmington, Del., also on September 11, the new Women's Auxiliary Ferrying Squadron was formed to supplement the work of male civilian fliers in ferrying training planes from factory to field. Classes for training about 50 women in Army procedure at the airfield are now being regularly conducted.

On September 17 Lowry Field, Denver, reported the employment of 109 women drivers of trucks, staff cars and jeeps, thereby releasing soldiers for other duty.

The Vultee Aircraft, Inc., is the first member of the Aircraft Industry to have hired women to work in the plant outside of the offices. Vultee uses women arc-welders. Their most efficient woman welder is one who was the first woman acetylene torch welder certified in the U. S. She welded crows' nests for Navy vessels in the first World War.

At Colt's Patent Fire Arms Mfg. Co. in Hartford, Conn., four policewomen were added to the plant protection force on July 18th. The Waterbury Clock Co. in Waterbury has several women guards, as have the Remington Arms Co. in Bridgeport, Conn., and the Timken Roller Bearing Company in Canton, Ohio.

On July 30, Seattle shipyard precedent was upset when four women took the places of men in the machine shop of the Seattle-Tacoma Shipbuilding Corp. Even in the first World War no women were employed in these yards.

In Detroit, Mich., Miss Mary Louise Stout, 25 years old, is assistant to the Chief of the Detroit Naval Ordnance District and is in charge of 270 women inspectors.

Out in Miami, Ariz., women are working in copper mines. They have taken over mechanical jobs in the concentrating plant and in the machine, pipe-fitting, and repair shops.

The experience of shop supervisor at the Brooklyn Navy Yard was said to agree with the findings of executives in other armament plants where women have been engaged to relieve men for combat duty. Women have been found to excel at jobs requiring a high degree of manual dexterity, speed and accuracy. They were found also well fitted for repetitive tasks requiring much patience and for positions demanding careful observation. They cannot, as a class, however, qualify for jobs that require considerable strength, nor would they ever replace men in jobs requiring heavy lifting.

At the New York City plant of the Inspection Board of the United Kingdom and Canada Co. women inspect gauges that are used for inspecting all munitions to assure interchangeability of parts.

Out at the Vega Aircraft Corp. at Burbank, Calif., long lines of women work at benches assembling electrical control panels, bomber-control panels, junction boxes, and instrument panels.

The Boeing Aircraft Co. at Seattle, Wash., boasts girl draftsmen, several women engineers, and a half-dozen expediters who read blueprints and help coordinate production.

Women shipbuilders created confusion in the ranks of the Boiler-Makers' Union at the Oakland, Calif., plant of the Moore Dry Dock Co. when they were employed in August of this year as boilermakers, or boilermakers' helpers.

This is only a very short list of all the companies who are employing women and of the occupations in which women are engaged. There should be no doubt in anyone's mind but that women must replace the vast numbers of men going into the service. The questions to be answered in filling these needs are as follows:

1. Which occupations in your particular industry are suitable or can be made suitable for women?

2. How many women will you require within certain specific time limits, and how will you train them?

About a year and a half ago we started to make an inventory of our men, their ages, marital status, their jobs, and the length of time it would require to replace them, with a view of setting up some sort of budget system whereby we could know, as the Selective Service went into effect, just where we would be hit first and hardest. Of course, we have continued that thing to indicate the man's draft status, and we can tell pretty much when we are going to lose these people and where our greatest needs will be. We have already begun to hire and train for those weak spots. It is something, no doubt, that all of you have done, but I thought I would offer it as being a rather practical way to get it down.

3. Which types of women are suitable for employment in your industry?

4. What changes in plant layout and general working conditions and facilities will have to be made?

The age factor of women gainfully occupied shows the largest percentage (16.3) to be in the 20–24 year group; 15.5 per cent are in the 25–29 year group; 12.3 per cent in the group 30–34, and 10.5 in the 35–39 year group; 5.6 per cent of the distribution of the female labor force is in the 50–54 year group. with 3.9 per cent in the 55–59 year group. A little

more than 1 per cent is located in the group 65–69 years, and, following the war, this group will probably shrink very considerably due to the old age security plan which tends automatically to retire those in this age bracket. Thus we find that 67.8 per cent of the women in the labor force are in the child-bearing ages of 20 to 44, and it is from this group that the greatest number of problems arise because of psychological factors as well as the physiological and sociological factors peculiar to this age group.

Problems of the employment of women might well, therefore, be classified in two groups—those problems having to do directly with the woman herself and those with which the employer is directly concerned.

Living conditions in communities which have suddenly been expanded by the war industries present another tangle for the newly arrived in industrial centers, as well as for the employers there. In rural areas where industrial plants are being erected special dormitories will probably have to be built.

The British experience of transferring and assigning workers by government order has been very good and may serve as a pattern for us. Dormitories have been built and so designed as to take care of housing and meals, and such arrangements are very important where swing shifts are used.

Another problem directly concerning the employee herself perhaps more than the employer is that of properly planning for the care of children and other dependents. The British have used various plans to meet the needs of child care. One which appeals particularly is that where one woman cares for several family groups at a time.

The term "day nursery" is a very restricting one, and is patently useful for only about one-third of the day. The real problems in the care of children and dependents lie between the hours of 3 P. M. and 7 A. M., and some constructive thought should be given to the very acute need of this group of workers for assistance not only in caring for their children while working but also to permit them time for sleep and recreation without interruption. Incidentally, I think the term "day nursery" is all wrong. I think the term "child care program" would cover the thing much more adequately and truthfully, if it is a good program to begin with. I don't think it is a good idea for industries or companies to get into the business of child care. I think that should remain a community project.

In part some of the problems facing employers are:

Selection and Induction: One of the difficulties in the problem of orientation of would-be female war workers during the last year has been the apparent lack of information available to women as to the kinds of jobs open to them; where the jobs are to be found and whether or not they would be suitable to fill such jobs if they could find them. I personally believe that a great many very desirable applicants have not found their way to employment offices in many communities because there has been no well-coordinated plan for the spreading of job information. I believe the United States Employment Service will have to do more in the way of publicity through newspapers and radio broadcasts than has been done, but there is still much to be desired in the methods used at the present time by all agencies logically responsible for this type of publicity. I refer to this publicity shortage because I think it has a harmful effect upon public morale in proportion to the disillusionment accompanied by it. It likewise creates a very definite problem for the employment interviewer. One of the chief sources of worry for the interviewer is the woman applicant who comes looking for a job ostensibly willing to "do anything," "any shift," only to turn up three or four days after employment looking for a transfer "to light work on the day shift." Better vocational orientation of these women before the employment interview is highly desirable. I have found the photograph particularly useful where you have several hundred women to interview in a morning.

When the problems of transportation, leisure, housing and care of dependents appear to be reasonably well solved for the group of applicants from whom selection for employment is to be made, certain standards for selection must be met. The establishment of these standards presupposes careful job analysis and job specification of those occupations to which women are to be assigned, as well as the establishment of a fair wage policy for the payment of their services.

Of all the steps in introducing women to occupations formerly assigned only to men, the most delicate is that which inducts them into the skilled trade groups, such as welding, lathe operating, milling, and drilling, etc. The improper introduction of women into this sphere can become a boomerang and create such dissatisfaction as to offset the advantages of such a plan. From the applicants referred to us we selected the older women—that is, those over 40. At the beginning we felt that the older women would display a greater sense of responsibility and be able to cope with the problems of adjustment better than less experienced girls.

How did the men like all this? Well, for the first few hours there was naturally quite a lot of speculation and comment, but since we had discussed our plan with some of the older employees in the department and with the employee representative of the room, there was not quite the disruption we had anticipated.

Our experience with women in the tool rooms was such a happy one that we decided to try to find laboratory assistants who could be trained to do metal testing, also to employ women to do chemical analysis on solutions used in the process of fabricating brass.

Three more of the problems uppermost in the minds of managements who have only recently begun to employ women are wages, hours of work and training and safety practices. It seems to be pretty well accepted now that women should be paid on an equal basis with the men for equal work performed.[1] This must be adjusted, of course, if the question of extra service, such as material handling by floor-men, or special machine adjustments must be made, in order to employ women in certain occupations.

The British experience may again show us the way in answering this problem and I quote from the Ministry of Labour Gazette, June 1940: "If women are able to carry out the work of the men they replaced without additional supervision or assistance," the rate was to remain the same as that paid the men for the job.

Hours of work and shift arrangements are important when large numbers of women are employed. The length of the working day and week and the hours during any day when women may work are arbitrarily set by the laws of the various States. In many States, particularly on the West and East coasts, special permissions have been granted, thus providing wider latitude in hours of work.

The occupational analysis section of the Bureau of Em-

ployment Security has made a detailed analysis of 1,858 different occupations in 21 war industries in order to determine the occupations suitable to women. The study reveals that a very large number can be successfully performed by women. The greatest barriers to women are on those jobs requiring unusual physical exertion and hazardous conditions of work. In occupations requiring long training periods, certain phases or steps in the job can be separated and taught within a reasonably short time. Women have proved themselves very adaptable in occupations requiring the reading of blueprints and the use of gauges and micrometers. There is already a shortage of experienced operators for milling machines, drills, light lathes and chucking machines, boring, reaming, tapping, threading, grinding, buffing machines and punch presses. There will be a constantly increasing need for women who have a knowledge of the setting up and operating principles of all types of basic production machines. Private employers are fast realizing that they cannot depend entirely upon government defense training to supply them with large enough groups of trained women; consequently, many of them are establishing classroom training for new employees as well as those being transferred within the plant to jobs requiring new skills. Others have enlarged vestibule training plans so that new employees are trained on machines under an expert instructor but without the pressure of work of a regular production department.

Health and Safety: One of the chief objections to introducing women into plants exclusively masculine is the problem which involves changing the plant lunch-rooms, restrooms, medical services, and general working conditions to accommodate women. The proper accommodations for women employees should be properly worked out and arranged for before woman are employed. The advantages of good plant sanitation and good working conditions generally are self-evident for both women and men employees so that little additional emphasis need be placed on this subject in this paper.

Clothing: The trend is certainly toward definite standards of clothing considered safe, suitable and attractive, and many companies have definite rules in this regard. It seems entirely practical, however, to set up a few simple and basic rules for work clothing. In some plants it would be almost impossible to set up a standard uniform because of the divergence in occupational activity.

A summary of the foregoing material follows:

1. A careful job inventory will disclose jobs where replacement of men will be required because of the acute need to enlarge the armed forces.

2. Careful and accurate job analysis and job specification will disclose jobs where women can and must be used.

3. Women workers must be selected carefully with regard to their physical, mental and emotional capacities.

4. Absenteeism will result if women have a transportation problem which has not been met, or if care of their children has not been arranged for.

5. Supervisors and male workers must be sold on the idea of women workers before they are inducted into war jobs.

6. Training programs must be worked out to meet the emergency needs and women workers trained early enough so that there is a minimum loss of production.

7. Women should be paid at the same rate as men for equal production and skill.

8. Plant facilities and working conditions must be such as to attract and hold desirable women workers and arranged for before women are employed at the plant.

9. The four classes of woman power must be drawn from—the traditional group, older women, handicapped women and colored women.

10. Finally, hours of work must be so arranged that women will be able to carry on in war jobs for years if need be and that everything necessary must be done to sustain the morale which is so essential if we are to conclude our war effort in victory.

The Government Viewpoint—Presiding: HENRY J. HOWLETT, Secretary of the American Management Assn. Members of the panel: CHARLES L. SHELDON, Chief, Containers Branch; ROBERT S. SOLINSKY, Chief, Metal Can and Tube Section; WILLIAM W. FITZHUGH, Deputy Chief, Containers Branch; E. F. TOMISKA, Chief, Fibre, Wood and Fabric Section; JULIAN H. TOULOUSE, Executive Consultant, Containers Branch; CHARLES DAILEY, Chief, Steel Drums, Cylinders and Tight Cooperage Section; PHILIP S. HARDY, Chief, Glass Containers and Closures Section; and FRANKLIN R. KELLY, Chief, Folding and Set-up Box Section.

CHARLES L. SHELDON: The situation on containers changes not from day to day, but hourly. Some of the things that will be told you here today will probably be different in a couple of weeks. What we tell you today is the situation today; and, of course, the situation two weeks from now may have changed.

I remember last spring, for example, that I made a statement that if you changed your packages or containers from critical materials, meaning, at that time, metal and rubber, to wood and paper, you would not have very much to fear, and that probably you could stay with them. That situation has changed.

Somebody made the statement also that we were not going to return to the cracker-barrel days. I think that fellow was right; I don't think you could get enough lumber or slat cooperage to get that far today.

We are going to get to the questions in just a moment; but I want to tell you this, first: the opinions that are expressed here by the panel, all of whom are members of the Containers Branch of the War Production Board, are their own personal opinions, and do not represent the official opinion of the War Production Board. I want to make that very clear.

CHAIRMAN HOWLETT: What prospect is there of WPB authorizing the use of non-critical metals, such as are to be had for closures?

ANSWER (by Dr. Toulouse): I don't know of any metal which is suitable for a closure that is not critical. The only non-critical metal we know of is lead and that, so far, has not been adapted as a single closure material.

CHAIRMAN HOWLETT: What have you discovered for closures?

DR. TOULOUSE: The most promising materials to date are not metals, but are the further uses of plastics, wood and paper.

CHAIRMAN HOWLETT: Has anything been developed that is really practical for commercial use, so far?

DR. TOULOUSE: Plastics have been used in the past a great deal and they should be extended. I was thinking particularly of the wood and paper closures that have been coming

in as a substitute for metal. They are rather new and, I think, untried; but they are promising. Plastics are the one proven material available for closure use.

CHAIRMAN HOWLETT: Are materials for plastic closures going to be available to industry?

DR. TOULOUSE: Not all of them. The freest are the thermo-plastic rather than the thermo-setting materials.

CHAIRMAN HOWLETT: How may a manufacturer of a packaged product going to our armed forces get some idea in advance what the requirements will be both as to amount and make-up?

ANSWER (by Mr. Sheldon): We certainly cannot answer that in the Containers Branch. You will have to go to the procurement agencies of the government to get that information. We do not have it in our Branch.

CHAIRMAN HOWLETT: What is the War Production Board policy in regard to new equipment for consumer goods industries?

ANSWER (by Mr. Fitzhugh): In the first place, you have to try to get a balance as to whether or not the amount of critical materials used in building the machinery is of a size or quantity not disproportionate to that which you intended to gain. Then, too, it must be considered whether or not the actual product is one which might be considered essential, or whether there could be devised some ways and means of making it without the expenditure of time, labor and materials in manufacturing machinery.

CHAIRMAN HOWLETT: What consideration is the War Production Board giving to the allocation of steel for replacement of light gauge steel drums normally considered single-trip containers?

ANSWER (by Mr. Dailey): The replacement of single-trip containers is not a particular program at this time. We are simply going on from day to day on the requirements for steel drums and trying to match that with the allotment of steel that is given us each quarter. Replacements for local use—the War Production Board is certainly behind any movement and perhaps will insist, at some future date, on all products moving in steel, that the steel drum be returned for further shipments, rather than replacing the drum with new steel drums.

Relative to the allocation of steel, I am of the opinion that essential industries will receive their steel drums at such time as the ones they have are worn out, this, of course, to be limited to the supply that is on hand for domestic use.

CHAIRMAN HOWLETT: I suppose they have a certain salvage value that warrants their replacement?

MR. DAILEY: Yes. I could forecast that the used steel drum will perhaps be sold under a priority rating in the very near future; and that no steel drum will be allowed to be sold for scrap until permission is given by the War Production Board.

QUESTION: What is the best substitute for an airtight steel drum.

ANSWER (by Mr. Tomiska): There are several metal-end fibre drums that are both liquid-tight and grease-proof. There are several plywood drums, also. Anyone going into a substitute should try to get away from any drum that uses metal, unless he has a product that is very highly essential.

QUESTION: Can you clarify the new order M-255, wherein the deadline for the drum is November 16th? After that time, are we to get permission from the new Allocation Board? What happens to the orders on hand carrying AA-1 and AA-2 ratings? Are they out? Must we then get permission from the Allocation Board? Or may we ship them?

ANSWER (by Mr. Dailey): All drums not delivered by the 16th of this month (Nov.) must have authorization for delivery from the War Production Board.

MR. LUND: What about drums with special interior lining that may not be good enough for a second trip. Are any plans being made for a special disposition of those drums?

MR. DAILEY: It is the thought of the War Production Board to use every steel container that we now have made just as long as we possibly can, as a container, where steel is absolutely needed.

QUESTION: It seems that in certain types of materials it is very essential, or actually a requirement, that they be shipped in steel. Under those conditions steel seems to be a requirement.

MR. DAILEY: An allocation order has just been issued, so that we can take care of products absolutely requiring a steel package, and that cannot use any other type. I refer to domestic packaging, as well as war packaging.

CHAIRMAN HOWLETT: Would not the question of what the product was to be used for enter into the allocation of the container?

MR. DAILEY: Yes.

QUESTION: Would not a barrel be a good substitute for a steel drum?

MR. DAILEY: Yes, the wooden barrel is a substitute for the steel drum, and the tight cooperage industry is being pushed forward to 100 per cent production at the present time.

QUESTION: Have any steps been taken to cover the return of drums? Have any steps been taken between the WPB and the OPA to perhaps increase that charge, so that the drums will be returned?

MR. DAILEY: Yes. Steps have been taken. It is not up to the WPB, however, to name the price. That is a matter for the OPA to settle.

QUESTION: Is there likely to be further reduction in the allotment of metal for rims and hoops for fibre containers, kegs, barrels, and so forth?

ANSWER (by Mr. Tomiska): Of course the steel situation is critical on any kind of container. I think you will have to make up your minds that you will not get all the steel you would like to have for any of those containers.

CHAIRMAN HOWLETT: Is stitching wire to be available to the manufacturers of folding and set-up boxes?

ANSWER (by Mr. Kelly): Stitching wire has become very critical because, first of all, the steel and wire drawing capacity are taxed to the utmost now. Stitching wire for folding or set-up boxes will be available only where it can be conclusively proven that there is no substitute type of box which can be devised to carry the particular product involved.

CHAIRMAN HOWLETT: Has anyone tried substitute collapsible tubes as yet? If so, what were the results? What type used?

ANSWER (by Mr. Solinsky): I understand that paper has been tried, but I don't know whether it has been proven. Plastics are being used by at least one or two manufacturers. I believe it has been fairly successful.

CHAIRMAN HOWLETT: What does the future hold for non-war industries in regard to the availability of machinery parts necessary for conversion to war work?

MR. FITZHUGH: In that case there is a good chance.

The situation in regard to all metals—bronze and every other metal that goes into the manufacture of machinery—has become so difficult that it has to be measured against the thing that it is going to do. If the conversion is from an actual domestic product to an actual war product, then the chances are pretty fair, still.

CHAIRMAN HOWLETT: What is the policy with respect to using what we have now, to try to win the war, rather than continuing an expansion program of more plants and more production.

MR. SHELDON: I don't think there is any question about that; and not alone getting along with what we have, but how much less we can get along with. I think in another six months we shall look back to the good old days as we consider the things that we have today. We are just not going to get them, that's all.

CHAIRMAN HOWLETT: What plans, if any, does the War Production Board have in relation to easing up or tightening the control on types of plastics suitable for closures?

ANSWER (by Dr. Toulouse): Certainly we cannot look for any easy help, because plastics are being called upon continually as substitutes.

QUESTION: What plastics are not critical?

DR. TOULOUSE: The thermo-plastics still seem to be available. They are not always suitable for closure materials.

QUESTION: Do you mean phenol formaldehydes?

DR. TOULOUSE: No. Phenol formaldehyde is a thermo-setting material. I refer to thermo-plastics.

MEMBER: Phenolics are out, for closures. There will not be any. Ureas are free as of now. How long they will be free, nobody knows; until the ammonia situation becomes critical, I suppose. But at the present time there are approximately 20,000,000 pounds of that material available, and it can be used for closures if you can find the molds and the molding capacity. Even that is pretty tight.

CHAIRMAN HOWLETT: What is the future of fibre containers for sizes of 5, 10 and 30-gallon quantities?

ANSWER (by Mr. Tomiska): I would say it is fairly bright. There are several of the large manufacturers in this country who are now producing such containers. Those people have ample capacity at the moment to take care of the needs of any product to go into that drum.

CHAIRMAN HOWLETT: Is the War Production Board contemplating allocation of new steel drums?

ANSWER (By Mr. Dailey): Yes, on November 16th; and from then on out.

CHAIRMAN HOWLETT: Is it possible for a box maker to purchase new fabricating equipment?

ANSWER (by Mr. Kelly): It is possible for a box maker to purchase new fabricating equipment if the use to which his equipment is going to be put in our opinion is of sufficient value to the war effort to allow the release of that particular machine. If the machine is completely fabricated, it might be easier to release it. If you were starting from scratch and having to allocate the steel to build the machine, and if the machine is completely fabricated and there is a good use for it, the chances are that it will be possible to get it.

CHAIRMAN HOWLETT: What progress is WPB making in the development of standard specifications for packing, packaging and shipping?

ANSWER (by Mr. Tomiska): There are two manuals now published, one covering ordnance materials and another covering all military products except subsistence items, medical supplies, and chemical supplies. Manuals for those latter three categories are now in the process of being developed.

CHAIRMAN HOWLETT: Is the War Production Board going to allow equipment manufacturers to supply the parts necessary to change the packaging of their product to non-critical materials, such as from tin to glass?

ANSWER (by Mr. Fitzhugh): Reasonably, yes. If the product is one that does not seem particularly necessary in the war effort, the chances are that it won't be allowed. Nor will it be allowed if it takes an amount of machinery and man hours in building that machinery, together with the amount of steel and metal necessary, that is not in balance with the saving of tin.

CHAIRMAN HOWLETT: Why cannot the War Production Board standardize the packaging of different products, instead of different agencies of the government asking for the same item packed in several different ways?

ANSWER (by Mr. Fitzhugh): One of the reasons is that the different Services require that the products be packed in different ways. The Army needs it one way and the Navy might need it another way. There could not be a standard package, because it would not serve both purposes. You might make one package that would fill all the requirements in one case but would be unnecessarily extravagant somewhere else. So the different government agencies set up their own specifications.

There is quite a committee set-up, within the War Production Board, that very carefully investigates a product and the stresses that it receives in transportation. There has been a very strong effort to cut out, as far as possible, conflicting specifications.

CHAIRMAN HOWLETT: What is being done to simplify priorities and priority regulations?

ANSWER (by Mr. Sheldon): There has been a new plan announced this last week. The plan is strictly an allocation of all critical materials; not quite all—a few more materials will be added. It will be divided up between the armed forces, Lend-Lease, the Board of Economic Warfare, and civilians. There is just so much critical material. It represents a pie, and you are going to cut that pie according to its size. When you get your slices out of the pie, there is no more left. It will simplify the priorities situation to the extent that we will know what we have to pass out. We are just starting to put the plan into effect and to get data and information together. It will probably go into effect the second quarter of 1943 in a big way. You will be getting questionnaires and sending information in to us very shortly.

CHAIRMAN HOWLETT: Has anyone found a suitable substitute cap liner for the tinfoil liner used on chloroform-containing compounds?

ANSWER (by Dr. Toulouse): I don't know of a substitute that has been tried out.

CHAIRMAN HOWLETT: What is the situation regarding stitching wire and strapping wire used for corrugated and fibre containers, used for food directed to civilian usage?

ANSWER (by Mr. Tomiska): We feel there are many corrugated containers now using stitching wire which could equally well use tape. For domestic shipments, eliminate stitching wire wherever you can.

CHAIRMAN HOWLETT: What is the picture on materials with respect to use in non-war products?

ANSWER (by Mr. Sheldon): Critical materials in non-war products, non-essential products, in six or seven months

are going to be out. We are going right back to a very low economy, and, certainly, they are not going to be allowed.

QUESTION: Is there any measure of what might be called an essential product?

MR. SHELDON: Anything that interferes with the war is non-essential.

CHAIRMAN HOWLETT: There are only three essential things in modern life—food, shelter and clothing. We must provide our civilian population with those three things in reasonable quantities. But, over and above that, I think you will find that the government—and rightfully so—is going to take anything it pleases.

QUESTION: Under Order L-197, may packers fill steel drums of customers for products listed under subparagraph (c) (4) ?

ANSWER (by Mr. Dailey): Well, Limitation Order No. 197 is a packing order. It forbids the packing of certain products in steel containers. Under subparagraph (c) (4), the list is composed of products that may be packaged in steel containers, that are owned and are in inventory, including new drums purchased prior to September 7th or September 14th, and old drums or used drums purchased prior to November 7th. It is the policy of the War Production Board that if it has been the practice of a customer beforehand so to do, he may send in drums owned by him not having the X-mark on the bottom plate, and have such drums filled with the product that the packer has formerly taken care of for him.

CHAIRMAN HOWLETT: What is the present status of the simplification and standardization program of the War Production Board in regard to glass containers?

ANSWER (by Dr. Toulouse): The present status is really covered by Order L-33 as amended on September 12th, in that certain things were standardized and the use of standardized containers was made mandatory for distilled spirits, beer and wine, preserves, jams and jellies. At the same time, a whole group of standardized packages were included but no mandatory provision made for them. Those packages were largely for foods. That is the present status. It did not seem advisable to standardize completely until all the usable molds are in use.

CHAIRMAN HOWLETT: A serious shortage has developed in facilities to manufacture pasteboard canisters to replace tin. Is it true that the large can companies will not be permitted to tool up in order to relieve this shortage?

ANSWER (by Mr. Fitzhugh): If the product is a necessary one and is part of a revision program, it would be allowed, to some extent; but only to the extent that the complete manufacture of the product entailed.

CHAIRMAN HOWLETT: Is the War Production Board doing any materials research work or is this considered an industry problem?"

ANSWER (by Mr. Fitzhugh): Generally speaking, industry will have to do that research work for itself. A little group of men down in Washington cannot do it. Industry itself has the means, through its plants and laboratories, and they know better than we do just what they require.

CHAIRMAN HOWLETT: Has anyone tried caps made of wood or ceramics? What were the results?

ANSWER (by Dr. Toulouse): Yes—caps of wood are being tried for distilled spirits and wines where metal was denied. There is a certain amount of breakage through splitting, if the caps dry out. They seem to need protection. However, the results have been good enough that distillers have continued to use them.

In regard to ceramics, that means chiefly caps made of glass. Those have not yet been tried. We have been shown a number of glass caps that should have certain possibilities.

MEMBER: There is a ceramic cap that has been used in certain electrical fixtures. They are expensive, and might not be practical for some products; but for others which could bear the cost, there might be a definite possibility.

CHAIRMAN HOWLETT: What special attention is being given to packaging regulations for airplane shipment, as compared to shipment by surface transportation?

ANSWER (by Mr. Tomiska): Nothing has been published yet. It is intended that a manual will be brought out on those parts in the near future.

CHAIRMAN HOWLETT: Is a shortage of glass now imminent?

ANSWER (by Dr. Toulouse): At the present time, no. The glass industry for the entire year has been working on something like 80 per cent of its rated capacity. It can still take on quite a few packages, provided those packages can use closure materials that are either justified by the materials that go into them or use a nearly completely non-critical closing material. The pinch is on the closure and not the glass capacity.

QUESTION: What future regulations can be expected with respect to further curtailment of packaging materials? What materials will be involved?

ANSWER (by Mr. Fitzhugh): I don't know what materials will be involved. Some things are now critical that were not formerly critical. We thought, a little while ago, that wood, paper and glass were fairly free. Now Dr. Toulouse has told you that glass is relatively free but that wood is not free at all. And paper is very rapidly becoming not free—paper and paper products.

When that situation arises, steps will be taken for their curtailment.

QUESTION: What substitute containers are being used as a replacement for tin shaker top cans?

ANSWER (by Mr. Fitzhugh): There are a number. They are rapidly developing. The situation on that, however, is the same as with a good many things. The machinery to make them is limited. There are many sift-top packages now being made that use no metal at all. Some of them use one little piece of metal that makes the swivel—that is, the top of the can.

QUESTION: There has been considerable mention in the press as to the probability of WPB orders restricting production of paper and paperboard products.

ANSWER (by Mr. Fitzhugh): In the winter months, the paper and paperboard industries were working on a production basis of 18,000,000 tons. In 1941 there were 17,200,000 tons made. That is domestic, and not including any importations. It now appears that this will probably have to be reduced to somewhere in the neighborhood of 12 or 13 million tons. If that is so, you are going to have curtailment. A lack of labor in logging operations is one of the reasons. When they do cut them, they have to haul them in on rubber. Over 86 per cent of the pulp wood or wood used for making pulp is hauled on rubber out of the woods. You cannot use that rubber to haul wood to make paper products that are not necessary. The paper mills cannot be allowed to use steel and copper and other mill supplies of metal to make paper which may not be really required for our sustenance. I ven-

ture to say that in 1943 we shall have to reduce to the neighborhood of 12 or 13 million tons. That will be true because of the facilities that would need to be used and not just the product itself. If there are only 12,000,000 tons to be made, we must come down to meet that 12,000,000 tons, since in the Container Branch we use between five-eighths and three-quarters of all the paperboard that is made.

QUESTION: Some time ago a program of re-use of shipping containers was instigated. If it comes down to a matter not of scrap paper but of manufacturing facilities, perhaps that program should be re-started.

MR. FITZHUGH: You would be wise to use again your containers wherever you can work that program out.

QUESTION: To what extent is industry successful in changing their packages made of metal and other critical materials to non-critical materials?

ANSWER (by Mr. Fitzhugh): Considerable progress has been made. In the tobacco industry, in the packaging of two-ounce tobacco packages, you know they used previously these little cans, and there were 700 million of them used in this country. Starting right now, those tin packages are no more. Every single tobacco company in this country packaging that tobacco has changed to an all paperboard package, and they have saved about 40,000 tons of steel. They will use about 12,000 tons of paperboard. That is a conversion. The same thing is true with regard to paint. Paint will now be packaged in an all paperboard container. We will save 50,000 tons of steel thereby.

Dog food, which is an immense item—somewhere in the neighborhood of 800 million to a billion packages of dog food per year—is going to be packed in paper, now, and the steel is saved. There will also be a tremendous amount of steel saved by the paper closures that are being developed to replace these former closures.

QUESTION: Which of the following will become critical before the others: glassine, sulfite, kraft?

ANSWER: Machine-finished label paper will not become as critical as the others, perhaps. I would say they are all going to be critical.

QUESTION: If the paper products industries are able to replace packages now made of metal, will the War Production Board still reduce the production of paperboard necessary to make them? Will the increased paper necessary to replace wood for government requirements, in addition to Rule 41 requirements, develop a shortage of paper, particularly for shipping cases, fibre and corrugated?

ANSWER (by Mr. Sheldon): We are going to try to get sufficient paper to package essential products.

CHAIRMAN HOWLETT: What is the present capacity of the tight cooperage industry?

ANSWER (by Mr. Dailey): The present capacity of the tight cooperage industry is approximately 15,000,000 tight wooden barrels per year, and 6,000,000 tight wooden kegs per year.

CHAIRMAN HOWLETT: Is that adequate for present requirements?

MR. DAILEY: If we can get 100 per cent production, and we are aiming at that, we believe it will be adequate for the time being.

CHAIRMAN HOWLETT: Since many wooden shipping containers are made from low grades of lumber, which cannot be diverted economically to other uses, why should there be a shortage of these containers?

ANSWER (by Mr. Tomiska): In the first place, there is a shortage of lumber; and in the second place, there is a shortage of steel. If we have to have boxes for overseas shipment, we are going to have to use some of those grades of lumber for that purpose. Consequently, there will be a shortage of low-grade box lumber for ordinary domestic shipment.

CHAIRMAN HOWLETT: What kind of information should a box maker give in applying for priority assistance other than the questions asked for on the back of the preference rating application?

ANSWER (by Mr. Kelly): If it is a difficult or a technical problem, he should write a letter to accompany the PD-1-A, and explain in detail, just as fully as he possibly can; because we judge the application on what the fellow says on it.

CHAIRMAN HOWLETT: What is the situation regarding the re-use of cans? What is the present trend on metal containers?

ANSWER (by Mr. Solinsky): As far as the re-use of containers is concerned, they can be re-used for products permitted. They also may be used for some products that are not permitted, so long as no additional new metal is required. The containers that will be permitted will be in larger sizes, to save metal, and with less tin coating—in some cases without any tin coating.

QUESTION: In the case of using old drums for receiving merchandise not authorized in new drums, can this practice be continued indefinitely for the life of the drum, it being understood that no additional drums are obtained?

ANSWER (by Mr. Dailey): I do not believe there is any distinction. If the product is not authorized in new steel drums, it is not authorized in used steel drums except under L-197, subparagraph (c) (4), as far as I know.

CHAIRMAN HOWLETT: If a company secures a contract for a product requiring metal containers from a prime contractor of military merchandise under PRP, how may the first company replace its containers?

ANSWER (by Mr. Solinsky): If the order he secures is accompanied by a preference rating certificate of higher than A-2, then he shows it on his PRP and it is extended.

CHAIRMAN HOWLETT: What is the relationship of products for civilian health to the war effort, so far as procurement of critical materials is concerned?

ANSWER (by Mr. Sheldon): Medicinal preparations that must go into critical materials for the sick at home or the boys in the service will get the containers necessary to package that product.

CHAIRMAN HOWLETT: Is there any government directive order contemplated which would prohibit the use of wood and make the use of fibre mandatory in the manufacture of 30-doz. egg cases?

ANSWER (by Mr. Tomiska): We are giving a lot of thought to limiting the use of wood for a number of products where there now are available suitable substitute containers. I should say that right now eggs fall in that class.

CHAIRMAN HOWLETT: Why are standardized bottles thought so desirable?

ANSWER (by Dr. Toulouse): The first reason for standardizing is that we must get down to closures of a size that use

less metal. The biggest change was from the 70-millimeter closure to the 63, because of the difference in square inches of metal required in the closure, the depth of the draw, and it meant a saving of between 30 and 40 per cent of the metal.

The second reason for standardization is to give us more capacity in the glass industry, in case that capacity is needed. We are not under any circumstances standardizing simply to produce standard containers.

CHAIRMAN HOWLETT: What effect does the rubber situation have on glass packing? How can I meet the steel situation with regard to glass container closures?

ANSWER (by Dr. Toulouse): We cannot use more rubber than we have used in the past. Our standardization program, wherever it reduces the size of cap, reduces the amount of rubber required. Being given the same amount of rubber, we can stretch it a great deal further. But there is an absolute ceiling on the rubber we can use.

Unfortunately, that affects glass very materially, because there are many things that can be packed in glass, or that could be packed in glass, if it were not for the present rubber situation.

That means that the use of glass as a substitute for other packages will depend so critically on the development of rubber substitutes.

We are trying to reduce the amount of steel by using smaller caps. In the second place, I believe that many people are using steel closures on glass where they might use a substitute. If a product is essential, it does not mean that that product can get all the steel it wants. Essential things are being packed in non-metallic containers. They are being packed in paper. The fact that a product is packed in paper does not mean that it is non-essential.

CHAIRMAN HOWLETT: Will fibreboard and wooden containers be placed under priority limitations?

ANSWER (by Mr. Tomiska): It may be necessary to place wooden containers under priority limitations. Naturally, it might be necessary to place fibreboard containers under the same limitation.

CHAIRMAN HOWLETT: What is the future situation concerning jute and hair felt for packaging purposes?

ANSWER (by Mr. Tomiska): All the jute we use is imported. The importations are mainly from India. An order came out the other day on the use of burlap, which very severely restricts the use of burlap bags for products. It is entirely possible that that list of products will have to be further curtailed as time goes on. I would suggest that anyone who is using burlap bagging material for any product begin looking around for a cotton bag or a multi-walled paper bag for it. Hair felt is not a very important packaging material, and I don't believe it can be counted upon to take us very far.

CHAIRMAN HOWLETT: What is the current status of chemically treated blackplate for closure use?

ANSWER (by Mr. Solinsky): It is in exactly the same position as any kind of plate permitted for closures under the closure or can orders—blackplate, terneplate or tinplate.

FRIDAY MORNING

Officers elected for the forthcoming year for the Packaging Machinery Manufacturers Institute are: WALLACE D. KIMBALL, Standard-Knapp Corp., Portland, Conn., president; H. KIRKE BECKER, Peters Machinery Co., Chicago, first vice-president; and KENDALL D. DOBLE, Pneumatic Scale Corp., Ltd., North Quincy, Mass.

EWING GALLOWAY

There's no room for idle machinery in this war economy.

Packaging Machinery —CHARLES L. BARR, vice-president, F. B. Redington Co., presiding.

H. H. LEONARD (Consolidated Packaging Machinery Corp.): I think it would be interesting to have an expression from each of the different packaging machinery manufacturers represented at the meeting as to just what type of war work they are doing, and about what percentage of their plant is engaged in war work. My company is producing 90 per cent straight war work; the other 10 per cent is the supplying of repair parts for our regular machinery and the finishing up of packaging machinery that we had on order at the time that the L-83 freeze came in.

JOHN HOOPER (F. X. Hooper Co.): We are doing a lot of critical machine tool work. We are also making special devices for the two branches of the armed services as primary contractors and as subcontractors. Our shop is well over 90 per cent engaged in war work. Our engineering department is almost wholly engaged in original development and experimental work on behalf of scientific divisions associated with the military establishments.

Our productive machine hours, incidentally, are today four times what they are normally. In the creation of the labor supply for that, we naturally had to train many people, as has been the case with all of you. Today, 10 per cent of our productive workers are women.

CARL SCHAEFER (Stokes & Smith): We are in about the same position; 90 per cent would represent our figures for war work. We still have a few unfilled orders which were unfrozen. They will be about finished this month.

The war work we are doing is mostly subcontracting—small assemblies. That is what we are trying to do, more than any of the regular machine parts.

As to our regular machines, we are still making some of those, mostly for Lend-Lease. We are doing quite a lot of powdered egg packaging, and also machines for the ration packages of lemon and bouillon packages. Quite a number of those are ordered through the Chicago Quartermaster.

WALLACE D. KIMBALL (Standard-Knapp Corp., Portland, Conn.): Ours is about 95 per cent war work. Two months ago when we first started out on the PRP plan,

we had about 75 per cent AA-1, and the balance AA-3 and 5. That part of our business which is not the war effort is for machine parts, as used for repair and maintenance. We have been working almost entirely with the Ordnance Department, in small arms ammunition, making case loading machines and equipment for handling loaded and unloaded components. Then, we have been making some waxing lines for ammunition which is packed in paper cases and waxed.

We don't have any women, but we are making arrangements now to take on some women. I was told in Washington the other day that it was to be expected that 80 per cent of the able-bodied men of draft age would be gone by the end of nine months. It was suggested that we hire partially disabled people, old people, and fill up with women as much as possible. That is what we are going to do.

CHAIRMAN BARR: Mr. Leonard also asked this question: what is the increase in your total productivity in percentages, this year, as compared with your best previous year?

Our own will run about 50 per cent higher this year, in dollar value and shipments, than in our best previous year.

MR. HOOPER: In talking in terms of increase of productivity, we ought to talk more in terms of percentages relating to productive labor, because your mark-up is different. Your mark-up is much lower; and, when you measure it in terms of dollars, I don't think you are telling the whole story. That is why I mentioned before that our production today is 400 per cent of what it was in terms of productive man-hours—400 per cent of normal. It certainly is not from the standpoint of dollar sales value, because the mark-up is so much lower on government work.

I recommend to you that you consider taking on older people. We are doing that—and we have had some very, very favorable results. I am referring to people over 55. We are giving these people assembly work, bench work, and light machine work; and we are trying to give them inspection work where they are sufficiently adept to do it.

HAROLD HOSEDALE (Package Machinery Co.): We are engaged 95 per cent in war work. The balance is made up of spare parts and a few wrapping machines that we are finishing up.

Our shipments this year will be four times any previous year. To build up that tremendous volume, we have developed a system of subcontracting, ourselves. We have about 20 other plants doing machine work for us. In the past month, in machine hours, we have received from that subcontract work roughly half of the machine hours that we do in our own plant. We have not as yet started to hire women; however, I think that we will have the first contingent of women in this week to work on shell loading machines for small arms ammunition. We have developed some of our own machines for loading Garand rifle clips and Springfield rifle clips, in which we have a volume of business right now. We have also developed a box loading machine and a linking machine for the steel links for 50-calibre ammunition for the Navy. Our engineering department is engaged about 95 per cent directly on war work.

We have done an awful lot of jig work for other defense people in the area. They send us their problems, and we design the jigs and supply the drawings. We don't make the jigs; we just do the engineering. We have found that we have been able to keep our drafting room busy up to the hilt on that type of work.

H. H. LEONARD (Consolidated Packaging Machinery Corp., Buffalo, N. Y.): We are taking men in at the age of 70 years and older. The only normal activities that we have are parts orders. We are selling twice as many parts as we ever sold before. We have an output now which is about four times our normal output.

We have designed and built special machinery for the Ordnance Department, almost exclusively. That is the work we are doing—from our own designs. We doubled our engineering force and we have had no difficulty keeping them busy.

In addition to that, we are building radio grilles that are used in airplanes. We have done considerable subcontract work—mostly on tools and fixtures and gauges for Curtiss and Bell. Within the next two or three weeks, we are going to introduce women into the shop. We have set up a small tool room in one portion of the shop. We have a very good foreman of that department, who takes considerable pride in helping people along. We are going to introduce the women into that department, but we are going to put them right on building machines and lathes and shapers on actual machine production work.

MR. GREEN (J. L. Ferguson Company): Our shop is doing subcontracting work—that is, machining submarine parts, landing barge parts, radio communication system parts—and we have made some equipment for cases containing shells and synthetic rubber. We have done little work on equipment for converting from critical to non-critical materials. That is comparatively small. I would say that, right now, our work is between 90 and 100 per cent war work. We have cleaned up everything that we have been allowed to clean up.

We are in one of these critical areas, also. If we could pick up more men, whether skilled or unskilled, we would do it. We are not using any women in the shop as yet although we have talked about it and possibly will have to do something about it pretty soon.

MEMBER: We are today running 95 per cent on war work, which consists largely of scaling machines for the small arms ammunition, .45, .30 and .50 calibre. We are running about six weeks ahead of schedule. We have also done development work. We have finished a fabric machine gun belt loader, on which we are awaiting shipping instructions.

We have developed and built and shipped some .30-calibre box loaders. We have also done a very large business in lens manufacturing equipment. We have made a number of lens edging machines.

As far as dollar value is concerned, we shipped our first war material back in 1940; I should say that this year's figure will be double that of 1940, and about 50 per cent more than 1941. Our productive hours over 1940, I should say, will be about 75 per cent. Our actual machine work turned out, despite the increase in hours, will be practically 100 per cent. We run our main machine tools 120 hours a week. Assembly—that is, all day work—might run anywhere from 50 to 55 hours a week. We run a full day Saturday. At the present time, we are putting in the toilet facilities and dressing room facilities for women.

I watched for different types of articles which appeared in magazines, relating to the employment of female labor. About a month ago, I ran across an article about one plant

down in Bound Brook, where girls on the benches were handling 37-lb. castings. The argument had always been that our stuff was too heavy. In our line, I don't think that we really have any individual castings that weigh 37 pounds; they are generally lower than that.

Incidentally, I might say that our blueprint boy is a girl and our timekeeper is a girl.

FRANK FAIRBANKS (Horix Mfg. Co.): Until very late in the fall we had a pretty substantial backlog of orders for our own equipment for the food processing companies. Since those were high rated orders, and since we needed them to get out the canned food that was required by the armed forces—Lend-Lease and so forth—we felt that that was work that we should not refuse to do in favor of work that was more strictly war work.

However, we did gradually take on subcontracting work, with various results as far as satisfaction was concerned, until we got in the groove of the kind of work that our plant and our organization could handle most advantageously. Work along the line of our own parts did not fit in on top of our regular production very well, because it required highly trained machinists and there was no possibility of getting more good machinists to add to our nucleus.

We therefore worked toward the line of long-run work that could be broken down into relatively simple operations and for which we could get relatively unskilled labor. We gave them a repetitive job; they just became machine tenders. We used our more highly skilled machinists as foremen or subforemen. That has worked out pretty well. One advantage of that work is that it can be broken down into relatively simple operations and run on engine lathes.

We have one airplane part job that we are running practically continuously, and we really haven't what we would normally consider a first-class tool on any operation. The first operation is performed by a 40-year-old cut-off machine which cuts this tubing into rings. First of all, it is threaded, and then the outside is turned and the inside is honed and milled on the side.

All of the equipment on which we are doing that is old stuff, yet, by careful inspection, we are maintaining high standards.

As to the employment of women, we were rather unique in that, until a few months ago, we did not have a woman in the place—not even in the offices. We have changed over. As far as the office is concerned, practically all of them are women. We have been purposely taking on more women than we anticipate keeping in the office indefinitely, figuring that we are going to use some of them as inspectors on one or two jobs when we are tooled up on them.

CHAIRMAN BARR: There is one problem that is bothering all of us, to a greater or lesser degree. That is the question of the effect of the actions taken by the Office of Price Administration in connection with the controlling of prices of equipment.

It is particularly disconcerting—that is probably the word to use—to those companies which manufacture machinery that cannot be priced from a price list—special machinery.

The findings of my own company in connection with that problem are these: it does not seem to be any serious hardship for us to adopt the October 1, 1941, basis for giving figures on special machinery prices, because the increased volume that we are doing substantially offsets the higher rates that we are having to pay—higher productive labor rates due, first, to an adjustment upward of labor rates to meet the market, and, second, to cover the overtime that we are having to pay. That seems, as I say, to be balanced by the extra volume that we are doing. In other words, our overhead is diluted to a greater extent.

Are there any questions, in connection with the actions of the Office of Price Administration, that any of you would like to hear discussed?

MEMBER: If a special machine is ordered—that is, a machine that is regularly manufactured, but one in which certain adaptations have to be made, how would you base your price on that additional experience of designing and engineering and changing your present model to meet that? Would you have a special price for that; or would that be fitted up to meet present-day demands in cost and so forth?

MR. HOOPER: We have two situations—for example, a machine for wrapping cigarettes. Some of those machines require special modeling; and we have a set of prices to take care of that special modeling, which includes design work and extra tool work. It is all in the formula.

Then, we have more or less very special adaptations necessary; and, in the pricing of those very special adaptations, we are using our October 1 estimated base. On October 1—or, rather, September 29—we established a new hourly quoting rate for machine work and for assembly work; and we also established on September 29 new mark-ups for the bakery line, for the tobacco line and other lines.

Any special jobs coming in, even at today's higher costs, are all priced at those formulas that were established last September 29.

We have not yet had occasion to refer any of these special prices to the OPA, because we are pricing them within a formula that we had employed regularly as of September 29.

Our last previous change in that formula, in one line, was in the previous May; and, in the other lines, the previous February. Our change previous to that was something like 12 months back—February 1941. There has been no change in procedure, then.

Ordinarily, we would be setting a new set of formulas because of rising costs. However, we are attempting to absorb the increased costs out of increased production, holding onto the formulas we established on September 29.

MR. LEONARD: In that connection, OPA recognizes an experience factor in setting new prices. That is, they know that the lines that we were building and pricing up to October 1 were our regular lines, on which we were well tooled up and which we knew exactly how to go about.

Now, as to the point that was made about a special adaptation: usually you are adapting that machine to do a job outside of your regular line. For instance, in loading ammunition your mechanism for moving the stuff may have been too harsh and you have to put an element of redesign and of development in there. They recognize that experience ratio.

In establishing that formula, based on your method of pricing prior to October 1, you can take some cognizance of the fact that you don't have tools or don't know exactly what you are doing.

MR. HOOPER: Where we have a special adaptation which requires some very special engineering and tooling equipment, we set up a separate account and make a sepa-

rate sales order out of that. In using those formulas, if you are building a machine as a subcontractor for an already established machine tool company, you are subject to the selling price ceilings established for that particular machine by the OPA. If your experience, has not been such as to enable you to build the machine within that ceiling you can go to the OPA and get a different price.

CHAIRMAN BARR: In accounting procedure, have any steps been taken to set up reserves to protect against renegotiation? I understand that the practice is that you are going to go ahead, that you are going to pay income tax on your total profit. Then, when the time of renegotiation comes around, the renegotiation is to develop, and you owe the government so much money—a return of profits. In the meantime, however, you have paid income tax on that.

The thought is this: how am I going to get that money back from the Treasury Department? A very substantial amount of money is going to be coming back to anyone who suffers from a renegotiation. I understand that they have set up this plan: whatever is renegotiated, when the final value in dollars and cents is determined, it is going to be less the amount of income tax that has been paid, that is, that any renegotiation is to be less the income tax that has already been paid on it.

MEMBER: What happens if you have a contract with the government for an established price on a machine that you never made before, and you produce it and sell it to customers throughout the country? What is going to happen with the profit? Are they going to have the right to come in and renegotiate that with you?

MR. HOOPER: No. If that price is within the OPA ceiling for the machine, they will not come in to renegotiate that unless you are selling that as a subcontractor to a prime contractor of the government or unless you yourself are selling as a prime contractor to the government. If, however, you are selling it to ordinary customers in the trade, just on ordinary purchase orders, that will not be subject to renegotiation.

MEMBER: For instance, we got an order for 100 machines. Those are being sold now throughout the country, also to Lend-Lease. The established price on the machine for the OPA—

MR. HOOPER: Who is paying them for Lend-Lease? The Army?

MEMBER: Both the Army and the Navy.

MR. HOOPER: Well, is it based on a contract that the Army—

MEMBER: It is a pool order from the government.

MR. HOOPER: And you are selling it directly to the government?

MEMBER: Yes. Not on all of them—it goes to manufacturers throughout the country.

MR. HOOPER: The OPA governs that. I am not quite sure that they will not ask you to renegotiate. The OPA is supposed to control that.

MEMBER: The price is set by them?

MR. HOOPER: That is right.

MEMBER: There is a standard price made by this machine manufacturer before.

MR. HOOPER: That is right.

MEMBER: And that was allowed by the OPA, and the contract was negotiated satisfactorily.

MR. HOOPER: That is right.

MEMBER: They never bother you on that?

MR. HOOPER: There is a deal that the OPA has made with the armed services, to the effect that they will lay off, as it were, touching anything that is subject to renegotiation; and the Army is laying off anything that is subject to their own ceiling.

CHAIRMAN BARR: We should like to talk about Federal income tax for a minute or two. We all know what the basis is: 40 per cent on profits and 90 per cent on excess profits. With a return of 10 per cent possible some day. Is that about what it amounts to?

MR. HOOPER: Yes. It is a refund of 10 per cent on the amount of your excess profits tax, to be refunded to you in the form of a bond that you should receive within 90 days after you pay your excess profits tax for a particular year, said bonds being non-interest paying, non-negotiable, but cashable two years after the Congress declares hostilities at an end.

It is given as a means of a reserve to take care of losses that all business organizations have been telling both committees in Washington are bound to be experienced when the war is over.

I want to say again in connection with the excess profits tax that you gentlemen have an obligation, one of self-protection, to write to your Congressmen and Senators when you feel that something in the Act requires changing. There is a group of business organizations and I happen to be the head of the committee of one of them—the Brooklyn Chamber of Commerce—that has been appearing in Washington on behalf of business in connection with the Revenue Revision of 1942 and the revenue laws of previous years. Other organizations that I might mention are the N.A.M., the United States Chamber of Commerce, the New York Board of Trade, the Ohio State Chamber of Commerce.

Those organizations are trying to do a job for you folks, but they can only succeed to the extent that you let your Congressmen and the committeemen know that the problems that they have been citing are really your problems.

The committeemen are really trying to do an honest job. They are really trying to make as good a situation out of a bad proposition as they know how to do. I particularly refer to the Senate Finance Committee. Those gentlemen want support for the courage of their own convictions and the way for them to achieve that support is to receive letters from you voicing your ideas with respect to the Revenue Act.

This particular Revenue Act that has just passed embodies something like 150 changes, which run the gamut from providing for relief for burdensome situations to the correction of apparent inequities that have been in the law as it was previously administered.

CHAIRMAN BARR: One thing that might be of little interest to us here is to know on what basis each of us is working as far as the excess profits tax is concerned. There are two bases, you know: the percentage of invested capital and the average earnings over the years 1936 to 1939. Generally speaking, I think, it is the larger companies that are on the invested capital basis. The small ones, almost without exception, are on the average earnings basis.

I want to read three questions by George Mohlman, of the Package Machinery Co.:

"What are other manufacturers doing in connection with the building of single orders for machines where they do receive a fairly high priority? Will the industry generally consider starting single machines from scratch?"

I can start that off—the smaller the company, the more easily they can justify the starting of a single machine, the manufacturing of a single machine—if it is a normally standard machine. The smaller companies would certainly proceed to fill single machine orders, whereas the larger companies would doubtless be rather loath to do it. That depends on the size, the amount of money involved, in the order. I think that the American Machine & Foundry Co., if it had an order for a single cigarette packaging machine, would certainly fill it; but, if they had to build all the parts, they certainly would not build it. Here is another question that Mr. Mohlman asks: "The relative importance of dehydrated foods, particularly with reference to the post-war period."

That is really a subject on which we could spend a long time. I, personally, am of the belief that dehydrated foods are receiving an impetus during this war that will continue for our lifetime. I also think that the packaging machinery manufacturers who are intensively cultivating that field and thinking of ways to package dehydrated foods are spending their development time to excellent advantage.

RALPH RUSSELL (E. I. du Pont de Nemours & Co., Inc.): Naturally, we have spent a lot of time on the dehydrated foods question; we have had several specialists working on it. Just for my own information, to bring this out into the light, who do you think is going to consume, actually eat, these dehydrated foods after the war?

CHAIRMAN BARR: I think we are all going to be eating them.

MR. RUSSELL: That is where I disagree and several men with whom I have talked are on my side of the fence.

CHAIRMAN BARR: I can see economic advantages to the dehydration of vegetables, the dehydration of foods, at the point of production. There are economic advantages that are on the side of supplying a great deal of pressure for the development of dehydration.

MR. RUSSELL: You are absolutely correct, on the economic side of the question. If we can get the dehydration down to the well-known tablet form, you can ship a tablet from here to San Francisco at a decimal of the cost that it will take to ship, for instance, a bushel of Idaho potatoes or Maine potatoes.

In this country, however, it seems to me that in normal times our distribution methods and loads, our railroads and trucks and so forth are more than competent to take care of all the distribution that we will ever need. There is a period that we are looking forward to—of feeding the world after the war.

For the long range future, however, outside of some special ties such as some of the soup mixes, I can't see the common, ordinary man attempting to eat dehydrated ham and eggs, and dehydrated turnips, onions, carrots and so forth.

After the war, the dehydrated foods will have to go long distances into areas such as China or Russia, or even the entire continent of Europe. We must, even after the war, give large quantities of nutrition and make those foods go long distances in as short a time as possible. Being intensely interested in the packaging machinery end of it, however, I wouldn't gamble 5 cents of your money on the long pull future of dehydrated food for our own consumption.

MEMBER: Isn't it possible that that process might follow along like the frozen foods? Dehydration is moving along very rapidly.

MEMBER: Last spring, at the meeting, the president or vice-president of one of the large dehydrating outfits commented on a question of somewhat the same type. He said that they did not feel that dehydrated food was going to replace anything. They think of it as an additional line that definitely has its place.

CHAIRMAN BARR: To take care of excess production, for instance?

MEMBER: He didn't go into any particular detail as to just what that was—but that is more or less what they had in mind.

CHAIRMAN BARR: Mr. Doble of the Pneumatic Scale Corporation asks a couple of questions: "What is the policy of members in regard to having machines built by small machine shops that are not doing war work?"

MR. LANGSTON: We had an experience on some of our coding machines which were passed by WPB. We couldn't machine them. We could assemble them, but couldn't machine them. We got hold of a small machine outfit and the result was that we had to rebush all the holes that they bored.

MEMBER: We hadn't any of our machines built; but we have had repair parts, replacement parts machined outside—due to our own capacity being so taken up with machines for machines that we were building. We picked out a shop that could do the work, but the cost was so high that we just couldn't afford to do it. We just had to quit it. We did that with three or four different shops. The work was satisfactory, but the cost was too high.

CHAIRMAN BARR: Another question that Kendall Doble asks is this: "What is the policy of allowing customers to make their own repair parts during these critical times?"

MEMBER: How are you going to keep them from doing it?

CHAIRMAN BARR: I don't know. Of course, it has been done as long as I know anything about this industry. We have always had a policy in our business of not surrendering drawings, at least. I can imagine a customer with a substantial number of machines who absolutely has to have parts and you cannot supply them. What else are you going to do?

MEMBER: We are a customer. We often have a problem like that, where we get a good priority to get parts, and they can't supply them fast enough. Therefore, we have to do it. Even if we don't have the prints, we go ahead and do the job.

CHAIRMAN BARR: We have known that to happen a good many times, as a matter of fact. Before the war, there were companies—there are companies—which, to save time, have made up their own spare parts.

The next question is: "What is the experience of members and those present in connection with shipping machines to fill orders without motors because you can't obtain the motors?"

We are doing it and it is truly amazing when you realize how many motors there are around this country that are not being used. There isn't a plant in the United States that doesn't have dozens of small motors that are not being used. I am exaggerating a little bit, but there is a tremendous number of fractional horsepower motors unused in this country. If we should scrap all the unused fractional horsepower motors that there are in this country, we would have a tremendous amount of copper, I believe.

MEMBER: We shipped some machines recently without the motors and gave the customer credit for the cost of the new motor.

CHAIRMAN BARR: I think that is generally done.

MR. HOOPER: All Canadian shipments are done in that way.

MR. RUSSELL: I should like to ask one question, con-

What is the changing picture in the American retail store?

cerning the general situation on heating elements. Are the customers going to be able to obtain, in some way or other, heating elements?

CHAIRMAN BARR: We have not yet failed to receive elements. It takes a good while, but we have been getting them; we have been getting our orders filled. The delays are bad, but we have had no refusals yet.

MR. RUSSELL: You are able to get those on your repair priority extended—

CHAIRMAN BARR: No, no. We are extending, as we are permitted, our PRP rating, which is high. Maybe that is the reason why we are getting ours.

MR. RUSSELL: But you, in turn, furnish them on a repair priority?

CHAIRMAN BARR: That is right.

MR. RUSSELL: Then the answer is that any customer should, by all means, go through the original machine manufacturing sources to obtain his?

CHAIRMAN BARR: I should say so. I think it is the only place to go. Rightly or wrongly, we are applying our PRP priority to obtain our materials.

MEMBER: You make provision for the PD-25—

CHAIRMAN BARR: That is right, we do.

MR. RUSSELL: It simply means changing the source of supply for a lot of customers, because many large customers have gone directly to element manufacturing sources for many years to get their heaters. Now they are unable to obtain them.

CHAIRMAN BARR: Yes, they would have difficulty in going directly to the producer.

FRIDAY MORNING

What About Civilian Merchandise —WILLIAM M. BRISTOL, JR., Bristol-Myers Co., Hillside, N. J., discussion leader.

CHAIRMAN BRISTOL: At the risk of a little bit of personal history, I would like to give you one bit of background about Washington in regard to their position down there toward civilians. When the original OEM was set up there was set up a Section known as Division of Civilian Supply. The personnel in that division were appointed and charged with the responsibility of presumably looking out for civilian needs. I don't know what the original "M" day plan was, but I think it was to put the entire control of everything in the hands of the Army. Maybe that was why it was really never put into effect and they realized that probably it would be essential, particularly in a democracy, to have certain civilian checks and balances against the Army control, not because the Army wouldn't try to do an intelligent job and has, but because they obviously were trained to think only of their armed troops and secondarily of the civilian population.

Personally I had experience with one and only one major branch of the Army and that was the Surgeon-General, and I never knew a man who was more concerned about trying to keep the civilian supplies available than Col. Shook.

I am saying that because I think sometimes we are inclined to think, particularly in the early days, that the Army's attitude was a little bit—well, "Take it," and that whether other people got anything or not was not in their minds and was nothing that they seemed to worry about. I think they do worry about it. They realize that the figure is correct that for every man at the front they have got to have five or six behind him. It means that those five or six certainly have got to be fed, housed, clothed and probably given a certain amount of civilian merchandise to which they are accustomed.

When the OPM was reorganized, Donald Nelson maintained this Division of Civilian Supply, presumably again for the purpose of having within the WPB some group charged with the matter of allocation of materials and the rules for the production of those materials for civilians.

The actual mechanics of it in Washington today are pretty much that the Office of Civilian Supply does make the allocations. They are the ones that have been making the studies of the available amounts of material and then have determined, together with the requisitions, requirements, of the Army and Navy how much shall be given to civilians. That amount as the days and months go on is going to be really a bare necessity. I don't think there will be a great difference of opinion among any group of men as to some of the things that are extreme, out and out luxuries, in our present standard of living. Only the extremes are very obvious, however, and as materials get tighter we all will probably have affecting orders coming out from WPB which to us may seem a little unreasonable.

We might consider the problem from the point of view that each one of us is the manager of a company producing—and I will pull these out of the air—a popular, well-known soft drink, or a popular brand of tobacco, or even we will say a toothpaste. We know that there is a great demand for those products, they become pretty much of a daily habit with millions of the population, but we are confronted with the possibility that WPB might easily say, and probably with a good deal of justification, "You don't have to smoke," and if the materials required to make that package of cigarettes or tobacco are vital to the production of some out and out armament or something of that nature, we would have to do without it.

We can't control that as industry, but we can, I think, try to satisfy not only our own selfish interests but the demand of the population to give them something that is the best equivalent. That is a challenge to our own ingenuity. In other words, we have got to try to supply them with some kind of a cigarette or some kind of a drink or toothpaste as long as it is possible to do so.

How are we going to do it and what are the problems that have confronted a great many of you men in attempting to do it? One of the first things is the matter of the maintenance of your existing equipment. Most of us use automatic packaging machinery, highly developed, specialized for the particular field in which we produce our merchandise. Unless

that equipment is actually producing something that is sold almost exclusively to the Army and Navy, we know we have no priorities to either replace it or to repair it in case of worn-out parts. We likewise know that the machine companies, the manufacturers themselves, for the most part, have pretty much converted their plants over to direct war work. They probably are not building automatic packaging machinery, as we know it. They may be running out of their supply of spare parts and we can't get those unless we have a high priority rating. How are we going to maintain the operation of our plants during this period and under those conditions?

I propounded this question to one machinery manufacturer and asked him first, "Is it the policy of your company to maintain service men during this period?" This man said very definitely they did, that they felt it was absolutely one of their responsibilities to maintain available, on whatever terms they were, some men to service their machines.

Is there any company that you have found that is not maintaining service, as we know it, where a service man can come in and iron out that particular kink that we seem to be stuck with? Is everything running smoothly?

MEMBER: I think we are all maintaining our own repair shops to a great extent, but I have never yet asked for any particular part that they haven't been able to furnish.

CHAIRMAN BRISTOL: Well, another machinery man told me a rather interesting case where they were on war work. He said, "We couldn't supply the part; we couldn't supply the labor necessary, but we did supply the drawings which we gave to our customer and he was able to get the necessary parts built from those drawings."

Another case was brought to my attention. A company needed a certain type of machine. They had no priorities. As a matter of fact, it was for a new package that had been designed as a replacement of a metal package. The company couldn't supply them with the machine, but they did circularize completely all their past customers of that type of machine and were able finally to secure the names of four companies who were willing to dispose of machines that were made available for this company that had designed the new package.

How many of you men have taken special precautions or have given any thought to the special precaution of maintaining the machines you have got? Have any of you laid out any particular programs for that?

MEMBER: About six months ago we started with our maintenance men, going over with them and telling them about servicing their machines, on the ground that it pays to take care of parts that are apt to break. If a part does break we tell them that if there is a possibility for a repair in the city, to go right at that and not try to get it from outside because it takes time, and most of the time you don't get it. We have gone over with them and made them realize that those machines are worth just 100 per cent more than they were a year ago. In those days when you broke it you used to send for a new part and you didn't care. Today it means you are just out of luck on some things.

CHAIRMAN BRISTOL: Have any of you ascertained that the companies that supplied the machines have done anything about giving you special instructions just on this matter of lubrication or particular care?

MEMBER: F. J. Stokes Company has.

CHAIRMAN BRISTOL: I think it is something that machinery manufacturers could well consider. To me it is a little bit like the automobile companies and gas companies going head over heels now to show you how to make that car last five years instead of leaving it to you to worry about.

MEMBER: Mr. Bristol, the Production Managers' Assn. started a long time before the war along the lines that when a man was stuck his brother manufacturers would help him out. Lots of times in their bulletins, they tell you of a certain machine or equipment that their members have on hand for sale and you could write in to them if you were stuck. Just as the machinery manufacturers would write to their users, the Production Assn. would write to their members and see if some help could be obtained.

CHAIRMAN BRISTOL: The suggestion was made that we maintain a regular clearing house through our headquarters in the Packaging Institute, particularly from the point of view of letting them know what you have that is not in use and what you want that somebody else may have that is not in use. We are confronted with this problem that we cannot get new machines other than upon a specific job, and that specific job is going to be out and out 100 per cent war work with a AAA priority, otherwise you don't get it. If it isn't so now it will be a AAAA a month from now. It is going that way.

Have any of you laid out any particular program? What precautions do you take?

MEMBER: This circular that Stokes got out was a very good one and we passed it on to our mechanical group to pass on to the various departments which might be interested in that particular type of circular. They went into it quite thoroughly with the idea that they just couldn't do anything for any of their people who had their machines unless they had high priorities, working with Army or Navy. So it was of really some value to our mechanical department.

CHAIRMAN BRISTOL: There is a manpower shortage that has been developing and is going to become worse. What policy has been adopted to meet that situation?

MEMBER: We have put girls into shipping and checking where we always had men.

CHAIRMAN BRISTOL: How far have you been able to introduce girls into work that was heretofore carried on by male labor strictly? I am not talking about the automatic machine operation, because most of that has been done by girls for years, but the handling of cases, receiving of freight and things of that sort; have you been able to do very much that way?

MEMBER: It is surprising how much you can do. The minute you see one overloading herself, stop her and tell her she is overloading herself. We have found that there is a great class of girls between 14 and 16 that cannot work on a machine but could be on a belt putting cartons on.

MEMBER: Is there any regulation that you know of about the weights that girls should lift or should not lift?

CHAIRMAN BRISTOL: Not that I know of. I don't know of any Federal law applying to that. Does anyone know about any such state laws?

MEMBER: In Pennsylvania it is 25 pounds, the maximum that they can lift.

CHAIRMAN BRISTOL: Miss Davies, after the meeting yesterday, told me the important thing was to pick the girl, describe the job thoroughly and don't oversell the job from the point of view that it was light work when it was heavy.

As she very aptly put it, "I would rather interview ten people and get one that can do a job than to replace a girl ten times." By careful selection apparently she has been able, as you heard her say yesterday, to lick that problem. That is why I was interested. They are apparently slinging heavy metal around in that Waterbury plant and it is done by girls. I said, "How about the physical appearance or the physique of the individual?"

She said, "That will fool you. Don't pay any attention to it. It depends upon the attitude of the girl." She said, "I have had little bits of women come in and do jobs that would floor big, husky women." She said that some of these little wiry women come in and say that is nothing for them, that they have washed dishes seven days a week and this is not heavy work in comparison.

In our company we have made a survey of everybody in the plant, their draft status and so forth, with the thought of trying to ascertain and do some pretty good guessing as to when we were going to lose them. It has been our experience that there is a certain amount of feeling on the part of some of the men that they are not contributing directly to the war. It is a perfectly understandable feeling. If they want to leave and go work in an airplane factory and feel they are a little bit closer, I think we have to accept it.

Naturally enough we are trying to find all the war work we can do, so that at least we can answer that within our own shop, but I would certainly recommend that survey. I talked to one of the members of the local draft board in our area, where a great many of our people come from. The purpose was also to determine whether there would be any particular deferments that we should ask for. With that in mind I asked this member of the local draft board, "Now, how about that?" I realize that every draft board is different and their interpretations are different, but this draft board member said to me, "If you think you are going to want a deferment, let us know before we have made a decision on the case. Get your request in now." I think that is a perfectly reasonable position.

After all, you know the members of the draft board who are just other men like yourselves serving voluntarily, trying to determine in an honest way what decision should be made.

CHAIRMAN BRISTOL: I have thought of trying to get women on a part-time basis. There are women who have families who probably after their husbands have gone to work and the children to school would be glad to work for four or five hours. Have any of you tried that?

MEMBER: About two months ago Detroit sent out a list. They thought they would get 75,000 women to work and I think their list was over 200,000 when they got all the returns in.

MEMBER: That part-time matter is the most interesting thing that I have heard, because the airplane factories are so far out they must start very early and get back very late and it is not available to everybody.

CHAIRMAN BRISTOL: Well, I think there is still a fairly sizable market. Of course, it depends upon your community that might be tapped in that way to furnish you with a sufficient amount of labor.

CHAIRMAN BRISTOL: What about the matter of understudies? We talk a great deal about it now, but in the tobacco plant I picked out, how far should you go in the matter of trying to develop understudies? Where should you focus your attention? You have mechanics, trained machinists. They might be removed from your company completely and put somewhere else. I don't mean, however, the trend is that way. Have you thought about making women machinists?

MEMBER: We have thought of that, but we have not gotten up to the point.

CHAIRMAN BRISTOL: Well, I got quite interested again in Miss Davies' talk yesterday. I don't know why women couldn't be trained as mechanics. Many girls have handled these machines. A first-class operator is almost a junior mechanic.

MEMBER: I think a good many of these girls can tell some of the mechanics where the trouble is.

CHAIRMAN BRISTOL: Sometimes they do and how!

MEMBER: How about equal pay for equal work?

CHAIRMAN BRISTOL: I don't know how many of you people are affected. I know in our own case we made a job appraisal study two or three years ago, whereby we had every job evaluated. At that time where we had women we fell into what now apparently was the error of establishing an 80 per cent rate for the same type of work on the ground that, in general, a woman was not quite as regular. We are probably caught on that now because that rate is established unless we appeal for a change. If we move a girl into a job, we are going to stick to our case history, which is our own ground for establishing our rate, and we are in the rather unfortunate position of saying, "Well, this girl is only going to get 80 per cent of what the man did." Frankly, I don't think that is right. I am rather inclined to think that the WLB is right—equal pay for equal work.

MEMBER: If it is actual work, I should think it ought to be paid equally.

CHAIRMAN BRISTOL: How many of you have undertaken the matter of colored help, another point Miss Davies brought up yesterday?

MEMBER: We are in a colored neighborhood down there. We have all white help. I think if we have to resort to it, the best way is to start to sell it before you bring them in. Don't just say, "Here, you take it and like it," because they won't like it. Sell it to them as an emergency.

CHAIRMAN BRISTOL: How many of you employ colored help?

. . . Three hands were raised. . . .

CHAIRMAN BRISTOL: Have you gone into colored female help at all?

MEMBER: We did so in the laboratory for a while as dish washers and so forth, but other than that, no.

MEMBER: Mostly porters and men working on conveyor lines or packaging boxes and things like that.

CHAIRMAN BRISTOL: Have you been doing it for a long time?

MEMBER: No, that has been gradually coming in on account of the taking of other help.

CHAIRMAN BRISTOL: Jumping from labor for a moment, let us go over to the new matter of the WPB order that says, "You can't have so and so," or, "You can only have it to the extent of 25 per cent or so on order after such and such a date." What has been your approach in the efforts to find substitutes? Has it been as a result of the salesmen of the substitute company coming in and trying to interest you in an idea, or have you gone out and explored the field, and, if so, how did you undertake that work?

I think it would be interesting to have anybody's experi-

ences on that score. I would like to get a company that has never handled paper but that has always used tin.

MEMBER: Take the case of tin aspirin boxes.

CHAIRMAN BRISTOL: Do you know the history of that?

MEMBER: Well, I will tell you frankly I think Modern Packaging and some of those magazines really started it as far as I am concerned, many months ago.

CHAIRMAN BRISTOL: I saw the Bayer package shortly after the tin order came out, but I never knew whether they went to a box manufacturer and said, "See what you can do," or the box maker came to them and said, "We see the handwriting on the wall for you fellows. Here is something." I don't know which way it started, I was curious. What experience have you men had? Is it a mixture of both?

MEMBER: We really have three that I noted. The original manufacturer may come through with a substitute. If we are working with metal, for instance a metal cap, one of our regular paper manufacturers or suppliers will come through with a substitute paper cap. Third, are the comments that we can sometimes find in the different trade journals we receive.

MEMBER: They told us yesterday we probably wouldn't have enough paper.

CHAIRMAN BRISTOL: Well, unfortunately, that apparently is a fact and there is nothing we can do about it.

MEMBER: The WPB Board works too fast. They should give us more advance notice.

CHAIRMAN BRISTOL: May I divert for a minute and answer that inquiry, not in the capacity as chairman of this meeting? I think it is a little interesting to bring to our attention this viewpoint.

I am now taking the position that I am sitting in Mr. Sheldon's shoes and I have got to worry about some new shortage that is occurring. You cannot apparently tell everybody, "Now, three months from now you won't have any paper. Don't buy any more than you have to but get busy and find a substitute." Just as soon as you tell them, "Three months from now you won't have any paper," the buying rush starts. Therefore, those orders are issued with the definite realization that when they are issued they are going to work some undue hardship and unintended hardship in places where they don't want to have it happen, but they have got to do it.

I don't say it is right but it does work, and if you fellows were there you would have to agree it is about the only method that can be applied at this time. It is the only way they can immediately get hold of the situation. It is probably becoming less important now because they are getting more information about the existing inventories and so forth, but at first it was very difficult to know what the existing inventories were throughout the country. Sometimes they have appeared from very unexpected spots in amazing quantities. Very often that has brought about a subsequent relief in the order. So the tendency obviously is to be over-cautious. I think on behalf of our war effort that we have got to move that way.

MEMBER: They tell me that the draft boards will release the list of men classified in 4-F. Has anybody asked a draft board for that, with the idea of getting, maybe, somebody who has a bad ear or something like that?

MEMBER: In the last war they revised those lists right along. I know in the last war fellows without an ear and without a foot were all in on that special draft. We haven't done anything about the F list because it changes so.

CHAIRMAN BRISTOL: How many of you men have considered or used that classification that Miss Davies spoke about yesterday of rehabilitated men, slightly maimed or injured, or ones with physical defects?

MEMBER: We have always done it a little, getting deaf and blind, and some of those blind girls did very good work. They were a very good morale throughout our whole plant. The other girls took care of them. Some of those hard-boiled ones softened a little.

CHAIRMAN BRISTOL: Have any of the rest of you had any experience along that line?

MEMBER: We have taken on several of them. They work out exceptionally well. They usually try to outdo themselves.

CHAIRMAN BRISTOL: We have been working with a rehabilitation board in the State of New Jersey. We have had very excellent results with such labor sources. The one trick we have found true in handling rehabilitated employees has been not to baby them. They resent that. Treat them as if they were perfectly normal. That puts their chins up and they will do a better job for you.

MEMBER: A gentleman here asked me to suggest this idea. I don't know anything about our labor situation in Goodyear, but we have out there and have had for a number of years a colony of mutes, and I am told that they are among the most industrious and intelligent people that we have. There is complete silence in the room where they work because none of them can speak or hear. All conversation is with their hands. I don't know why they were obtained but there are several hundred of them in our company.

CHAIRMAN BRISTOL: You know this, that the ex-service man is going to have a prior claim on every job in the country, after the war. I think we can just presume that without debating how the elections go.

MEMBER: We are not worried about that because all the best economists in the country say we are going to have a boom after the war and we are going to have three times as much business as we do now.

CHAIRMAN BRISTOL: You have always had a boom after every war for a certain period. How long it is going to last is your question, I think.

MEMBER: Isn't it also the case, however, that a lot of the men you are taking on now have come from industries that are either temporarily wiped out or something of that sort and they will go back into those after this thing is all over?

CHAIRMAN BRISTOL: Probably, but I think the man who asked the question was thinking of the straight out-and out legal aspects. The Standard Oil Company of New Jersey has a pretty liberal labor policy of long standing, pensions and all kinds of things, and any new employee there signs a statement that he is a temporary employee. That statement goes with his record, presumably to protect themselves from backfire later on.

CHAIRMAN BRISTOL: We have been forced to make a lot of package changes, formula changes and so forth. How many of you feel that the changes are going to be permanent?

MEMBER: I do, a great many of them.

CHAIRMAN BRISTOL: I mean where we have gone from a tin container to a pretty darned good paper container. We may lose the paper, but when we come back to retrace our steps, are we going all the way back or not?

MEMBER: Well, I have a very good friend in the Aluminum Co. of America and I know at the end of the war the Aluminum Co. is going to do everything they can to increase the use of aluminum on everything from presses to toothpaste. It is going to be the old sales angle.

CHAIRMAN BRISTOL: You are probably going to have so darned much aluminum when you get back to normal civil-

ian economy, every brain in the organization will be working on uses to substitute it for something that you have adopted. I think all companies in fields of that nature obviously will be on their toes. I know some companies who have regular divisions in their organization doing nothing but post-war planning, trying to figure out where these things are going to be used.

MEMBER: I wonder how many have found that the substitutes are worth a damn.

CHAIRMAN BRISTOL: Have you found some that are better or most of them just substitutes?

MEMBER: Very few as good.

MEMBER: The plastics line is a good example. I think plastics are going to give metal containers a pretty good run for their money, but when you refer to paper I don't think you are going to have a substitute that is going to be worth a darn when it comes to running against metal.

MEMBER: On the other hand, there are many things you can't use now because of priorities that are going to be dandy after the war is over. I saw a paper that is a most remarkable thing, but it happens to have all critical things in the coating. I think when the war is over that is going to come back.

MEMBER: One thing I think is going to affect us more than anything else is standardization. Are we going to have a lot of standardization and how is that going to affect us so far as this concentration of industry is concerned?

CHAIRMAN BRISTOL: I feel it is a political question. I don't know what the rules and regulations will be, but I would venture the statement that the average American is pretty independent and doesn't like to be told, "You have got to do this," and, "You have got to do that." Presumably, therefore, the ingenuity of a seller is still going to exist if he can produce something that is a little bit different or a little bit better, provided he is permitted to. As to whether he is allowed to or not depends a good deal on the political philosophy. The trend has been that way but you may have a very definite reversal of the old pendulum when once the restrictions are removed.

MEMBER: Do you find in your contact in Washington that they talk very much about the English plan of standardization?

CHAIRMAN BRISTOL: Well, there was a lot of talk and not much knowledge when I was there. Of course, Dr. Byrnes is coming back. I think he is going to address the NWDA next week, and he is making a study of that, not only that, but nucleus plants as well, I believe. I had a talk with the man who was in charge at that time of drugs and medicines in England and their policy then—and this was pretty nearly a year ago—was more or less: live and let live. They said, "Certain sizes are out; your brands are permitted; your over-all production is limited to so much," and they worked it that you could only make so much above your cost. They didn't put a price ceiling in the sense of saying it is frozen at this level, but if you made a shilling a package if your cost went up you were still allowed a shilling a package. If your cost went down, then your tax took in the difference. That was their original procedure. Whether that is still true or not, I don't know.

Take two companies making cold cream. One has a line that sells for a dollar, or the equivalent, 4 shillings, and the other has a line that sells for sixpence. You can go into whichever field you want to but you can only produce so much. If the sixpence trade looks better to you, you can go into that, but you can only produce so many packages. If the dollar trade or the shilling trade looks better, you may go into that.

I understand the OPA hasn't liked the trend that has been developing toward the abolition of the 10-cent package. I don't know whether any of you men have had any conversations with them on that score, but we have. They seem to feel it is a separate economic market and apparently are thinking of doing something about it.

MEMBER: You have just been talking about standardization of products. Standardization of containers I think will come, going from tin to bottles, and the production will get so large they will run around and have everybody take rounds of different sizes.

CHAIRMAN BRISTOL: Well, it is an easy thing to do. They have done it in a few instances. You have got it in the breweries and in the whisky and wine distilleries.

MEMBER: Will they make it compulsory to everybody?

CHAIRMAN BRISTOL: Well, you heard Toulouse yesterday saying as long as the molds were available and the capacity was available they weren't trying to make it compulsory, but it is perfectly obvious they will want that situation tightened up.

MEMBER: I can see that point as to a mold, yes, but as to a production question it would mean they would have to key their machines on one rather than change over. That would be the utilization of the greatest tonnage.

CHAIRMAN BRISTOL: Then you run into the philosophy I was just telling you about. So you always have the tugs and pulls with your situation there in Washington. They don't all agree. There is that group which thinks that a 5-grain aspirin tablet containing nothing else is all you need and adding a little caffeine to it isn't essential and isn't necessary and "We won't let you do it," but to what degree that can be made effective I think comes to the political factor which in turn reflects the attitude of the country as a whole. If they believe in it, you are going to have it, and if they don't, you won't in the long run.

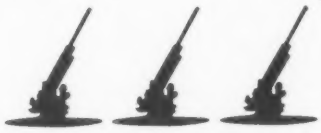
I think this matter of nucleus plants is probably a little more imminent than we might suspect, not because of the necessity here. That obviously was true in England. They lost so many plants by bombing and so forth plus rearranging all their populations and everything else. We haven't had it exactly that way. There was the thinking over a year ago down there that we ought to jump right to it, but that has calmed down a bit, and now I don't know what the report will be from Dr. Byrnes who was on the committee that went to England on that score, but from the point of your transportation I think you have got confronting you a pretty definite recommendation that that is apt to come through.

MEMBER: But the last report that you made out after 171 was revoked, on the bottom line it said, "What is the capacity on one shift over what you already have?" So it shows they are thinking of something.

CHAIRMAN BRISTOL: Well, I know they are thinking because I have talked to the men down there, and I also know that in a sense they are thinking that if it is possible they would like to have industry fix that up themselves. In other words, if I go to Bill's plant and say, "Here, you make my product for this area out there," they would rather have me do it than they tell him he has got to do it for me, but it is a very difficult and involved thing, but it is a responsibility that it is very hard for me to have them appreciate that I have got

to assume the responsibility for the quality and everything else of my competitor's product. You put an awful weapon in a sense in my hands, and he has an equal weapon with me.

So we have got to be darned good friends there when we do a thing like that.



Closures—CHRISTOPHER W. BROWNE, Editor, Modern Packaging, New York, presiding. Members of the panel: J. C. FEAGLEY, Armstrong Cork Co.; CLINTON W. BLOUNT, Bakelite Corp.; GEORGE SCRIBNER, Boonton Molding Corp.; HERBERT H. LEONARD, Consolidated Packaging Machinery Co.; Dr. A. H. WARTH, Crown Cork & Seal Co.; W. R. McGOWAN, Dewey & Almy; J. B. EISEN, Ferdinand Gutmann Co.; H. W. INGLE, Hartford Empire Co.; W. E. PARSONS, Keyes Fibre Co.; H. F. BROWNELL, McKesson & Robbins; DR. H. A. BARNBY, Owens-Illinois Glass Co.; R. A. ST. LAURENT, Rogers Paper Co.; THOMAS R. BAXTER, Standard Brands, Inc.; C. P. MORGAN, Vulcanized Rubber Co.; H. L. SMITH, Vulcanized Rubber Co.; ROBERT E. CROTTY, Waterbury Paper Box Co.

CHAIRMAN BROWNE: There is no need to tell you of the changes brought about in the closure field—probably the most perplexing problem before people in the packaging line to date. One question probably epitomizes the whole perplexing mess. Here it is: "The ultimate is a closure composed of materials that are not critical or likely to become so. (a) Is there such a closure? (b) Of what material will it be made? (c) Will such a closure function on existing equipment without major changes?"

I think that is inclusive enough, comprehensive enough, and general enough, to summarize what this entire meeting is about.

Here is another question: Can packers as a group clear through a central committee all available information on suitability of closures produced of various materials and get up a list that will show what materials are essential for particular products? For example: what products demand a phenolic material on closures and what quantity has to be available? The same question for urea, styrene, and so forth.

I am inclined to think that Mr. Blount of the Bakelite Corp., can shed a little light on that.

C. W. BLOUNT: I think the importance of the question applies to all materials, whether they are plastic or not. First, are there any products which demand a particular type of closure and a particular material?

Anything that is absolutely essential for us to live and to carry on the war effort will be given to us.

I felt that many packers of foods, cosmetics, liquors and wines have made countless tests, where they can give their experience to illustrate. If you want a closure for an acid bottle, how many different materials are in the running to close that bottle? Among them, in the plastic group, is one of the most acid-resistant—styrene. Styrene will go into synthetic rubber. But you have to have aid. If styrene were the only way to close an acid bottle, you would be definitely assured of getting the styrene. Frankly, we closed acid bottles before we ever had styrene. But may be it is the safest way and the best way to close an acid bottle.

In regard to thermo-setting materials, if, in packaging, you require pasteurization, then you certainly would get thermo-setting materials as compared to certain of the thermo-plastic materials. Notice I use the word "certain" because there undoubtedly will be thermo-plastic materials, as time goes on, which will stand the pasteurization, when and if they are available.

CHAIRMAN BROWNE: "What do the drug, pharmaceutical, cosmetic and liquor manufacturers need in the form of closures?"

H. F. BROWNELL: The first closure order that came out affected tinplate only. The second one affected blackplate, in addition. In regard to drugs, chemicals and pharmaceuticals, with a little ingenuity on the part of the companies and the fabricators of the caps and in the selection of the proper lacquers, they will be able to carry on until such time as perhaps a future order may come out making that situation the same as wine or cosmetics.

Closures of some sort or other are needed in the cosmetic end of the business which will hold up under the following conditions: there are very few cosmetics which do not have alcohol in them. They should be resistant to that. There is another group that has water in them. The fabricator should keep that in mind. There is still another group that has grease or oil in them. They should choose, if possible, materials which are resistant to those. There is another group which has essential oils or coloring in them. So they must have all of those considered carefully.

The first and primary specification is that the closure properly fits the container so as to avoid any leaks. I believe that one of the primary arrangements would be for the closure people to get together with the container people and reduce the number of sizes, so that the tools required for these new closures that we are talking about will be more easily obtainable.

The second thing is appearance. I think the public has to change its mind on a lot of things.

The third point is that it should be resistant to traffic conditions, and it should be possible to re-use it or re-seal it by the individual who is going to use it.

One very important point that should be remembered and should be worked toward is that the present existing machinery in various factories be utilized to apply or tighten that particular closure to the container. There is no question in my mind, judging by some of the closures I have seen and that have been subjected to my criticism from time to time, that it is a physical impossibility with the machinery now available to use those. It is inevitable that some machines will be thrown out of use and you would have to resort to more hand labor.

Another important point is the matter of costs. If the closure is going to cost too much money, it is going to raise a serious problem.

Outside of metal, the prevailing raw materials will fall into a number of different groups. The first group is the most common one—the phenol, urea, or plastic division. I know their production is limited at the present time, due to the inability to get sufficient raw materials. Another group would be closures made of wood. There are some in production at the present time. But, generally speaking, the volume obtained today that way is relatively small, and it would not meet the needs of industry. Furthermore, the tooling interests there are important, because they must have definite tools to accomplish definite purposes.

The next group might be classified as a subdivision of the wood, in that some pressed wood is being made—sawdust combined with other materials and pressed out. But this is all in the formative period, and it requires a great deal of machinery for it.

The next group is cardboard or paper. I have seen some of them, but, as far as I have been able to make out, the sizes are very much limited. There is another group, on glass or porcelain closures.

CHAIRMAN BROWNE: What are the basic requirements of a closure for essential foods?

H. W. INGLE: Perhaps most of you know that the purpose of the Hartford Empire Company for some 25 years has been to produce jars and bottles on specially designed machinery, in higher and higher quality, and greater and greater quantities. We have been worrying about that part of a jar that is called, in the glass business, the finish, or the neck, or the throat, as closely following the dimensional requirements of closing with various caps and closures that have been furnished by other people. As we get into essential foods we run into closure sizes ranging from 27 millimeters up to 120 millimeters—or they have, in the past. That covers all kinds and types, as well as sizes. The War Production Board has been urging a reduction of these varieties.

In our thinking of closures, we have hit first into a middle range. We picked naturally on glass as a closure, and have an all-glass package. The manufacturability of the two pieces that make up this package is thoroughly known to us. Our industry is equipped with machinery that makes lids in glass and has done so for years. Glass does not seal on glass readily. We do not mind saying we are doing it for the Chemical Warfare people. In our sealability problem we first try to duplicate rubber characteristics—stretchability, elasticity and many of the other characteristics that describe the varied uses and abuses of rubber. We have evolved some materials. These five or six gaskets are made from soybean, corn and things of that nature—basically non-critical materials.

Handling, packaging, filling, capping, sealing—they all come into the basic requirements of a package. For instance, we chose in this design to go to the largest possible throat diameter, so that heavy goods could be used in it.

Decapping is a problem, but apparently it is not too serious. We have a flowed-on material, on which we are doing some experimenting. With that we know that we can line this cap, seal it to this jar with a little vacuum, and that you can pry it off the jar as you have been in the habit of doing with non-commercial pry-off caps. Threaded caps in glass are out, because glass grinds on glass. There are means of lubrication, but they do not look too good.

To sum up, manufacturability and thorough duplicability are essential in the designing of packages. Ready and sure sealability against higher temperatures in food packaging—250 degrees for 45 minutes—is important. Ready filling in large quantities is important. Ready decapitation is important.

MR. DENMAN (Detroit Gasket & Mfg. Co.): Our company has made some effort toward the development of a non-critical closure material. We have been able to produce such a material which contains elements or materials which are not critical as of this moment. This material has been tested in a preliminary way, with satisfactory sealing on two-piece glass top jars with screw bands—the glass top jars that seal under vacuum pressure. The preliminary tests have been entirely satisfactory. It is a purely thermo-plastic material. It has been sterilized in home canning processes at 275 degrees, in all of the standard methods of home pack. It can be processed on standard rubber manufacturing equipment. It is now in production for one all-glass jar and is in production for certain sealing operations by one of the interested departments of the War Department. Our capacity for production of it is rather limited.

MR. BRESKIN (Modern Packaging): What is the nature of that material?

MR. DENMAN: It is a thermo-plastic. It has some rubber-like characteristics. It depends for its seal more on its thermo-plastic, in that it molds over the top of the jar during the sealing operation. It has been used in production in one of the automatic canning machines which is now in use. The material is in use in Philadelphia and is sealing in an automatic machine. It requires a dwell period after the sealing operation in order to eliminate some of the flow of its thermo-plasticity. But after it has cooled to the normal stage, it has very little, if any, cold flow at normal temperature conditions. It does flow at the elevated temperature and it is that principle from which we feel we are deriving the sealing properties. The material is available, apparently, in unlimited quantities. Our suppliers of raw materials tell me there are several million pounds of the raw material available.

MR. BRESKIN: It is non-toxic?

MR. DENMAN: Yes, to the best of our knowledge. It has been tested in any number of applications. No tests to date have indicated a particle of toxicity.

QUESTION: Is the material odorless?

MR. DENMAN: It has been tested in foods for home consumption, having been cooked directly in with the foods. The foods have been eaten. The control tests have been run along with standard rubber rings and the taste can be detected by those who are sensitive to taste, as being slightly different from that from a rubber ring; but it is no more objectionable than the taste from a rubber ring, although it is different. We do not recommend it for oil preparations. For salad oils or materials of that type, we do not recommend it as of the present moment. The difficulty may be corrected, but, so far, it is not suitable.

MR. ROMNEY (Procter & Gamble Co.): May I ask the gentleman from the Hartford Empire Company what he is particularly thinking about in a method of securing the glass top to the bottle; and, if a thermo-plastic is going to be the method of securing it, how he is going to remove it? Or how does he plan to remove it?

MR. INGLE: So far our work has been entirely in vacuum packing, as that is the prime effort in critical or essential food packaging. The vacuum, of course, gives you an atmospheric pressure that holds the lid on. The greater the diameter of the lid, the greater the pressure holding it on. We have found that these thermo-plastic rings that we apply, made from non-critical materials, flow too readily for a top seal.

The Detroit Gasket material is a top seal and does not flow in our retort practice at 250 degrees for 45 minutes, which is a high food-temperature-time cycle. There is one other one in particular where, in the shaping of the jar and the shaping of the cap, the design specifications are such that a flowing material that can be almost as soft as butter at higher temperatures or at room temperatures, still will not flow out of control and will hold the vacuum, and the removal is a pry-off with the back of the kitchen knife (which we don't recommend to anybody). A screw driver or a putty knife or something with a twist to it, that can get a direct upward push, removes this very readily.

CHAIRMAN BROWNE: What has the packaging industry done to facilitate the work of WPB in the matter of glass containers and closures?

J. C. FEAGLEY: In the brochure that we presented to the War Production Board and various affiliates in the branches of the War Production Board, we tried to attack the problem of glass conversion realistically.

The summation of savings of critical materials that we could predicate on using the physical capacity of the glass industry could release about 357,800 tons of prime steel, about 3,800 tons of other steel, but we would cost the nation 137 short tons of additional rubber to do the job. That is on the assumption that substitute material such as Detroit Gasket has now brought forward would not be available. Any such materials that do come forward and can do part of this job, of course, will eliminate a part of that cost in rubber, which is looked upon very seriously in the War Production Board.

CHAIRMAN BROWNE: Aren't glass jars and bottles going to become critical when the impending can restriction order is fully felt?

H. A. BARNBY (Owens-Illinois): Our glass industry is now operating at a capacity of about 80 per cent. Our total capacity is about 90 to 95 million gross per year. That 90 to 95 million gross represents a certain pie. We don't know at this stage to what things we are to assign our glass capacity. At the present time glass containers are put to uses that are very broad—beverages, beer, liquor, pharmaceuticals, dairy products, food and certain other miscellaneous uses. How much that total area of distribution will be curtailed or rearranged will determine how far we can go in making that capacity useful in replacing other more critical containers.

CHAIRMAN BROWNE: Are there any non-critical cellulose products which can be shaped, and drawn in fashion similar to sheet metal?

R. A. ST. LAURENT (Rogers Paper Co.): The answer to that question is yes, that there are available certain high strength, laminated, non-critical cellulose materials which can be shaped, formed and drawn in punch press equipment, using moisture as an aid; and these cellulose materials have considerable rigidity, strength, and, when subsequently treated, are moisture-resistant and have some adhesiveness.

W. E. PARSONS (Keyes Fibre Co.): Mr. St. Laurent has told you something about the laminated materials that are being worked on. My company's approach to the subject is a little bit different. We are manufacturers of molded pulp products and we actually mold a closure in one piece, carrying the threads in one motion. We do not do it commercially yet, although we think we can. We have produced a closure that has strong threads, that fits, passes tests that have been applied to it so far, permits removal and re-use. The particular make-up of that pulp finish can be developed for any particular purpose involved—grease-resistant in one case, water-resistant in another, or whatever may be the necessary specifications for the purpose to which it is to be put. It will also fit, we believe, in its final form, the capping machines and equipment which are now in existence for handling metal closures. Please understand I am talking about the larger closures and not the small bottle closures.

Its cost should be in line with the cost of the present metal closure when we have finished. The problem, however, is the time to develop equipment for building it. It is a new piece of equipment. In spite of the fact that we make several mill-molded pieces from molded pulp material every 24 hours in our plant, we have no equipment at the moment which can be re-designed or rebuilt to make this particular closure. So we must have a blank check, such as Mr. Blount mentioned, from the War Production Board, before we can actually go to town on this article.

R. E. CROTTY (Waterbury Paper Box Co.): It so happens that about 15 years ago we brought some presses from Europe to draw face powder boxes—boxes, covers and drums—in one piece, to give strength. When this emergency came along and there was a demand for a pasteboard cap or some sort of cap to supplant metal, we made a statement to one of our cosmetic customers that we could draw a cap.

About five months ago we started to put that thread in the cap in some way. The first thing we did was to draw the cap, and then impregnate a rim with a stiffening material and then thread the rim and stick the rim into the cap. We had not done that very long when we made some tests on it and found out that it would not be strong enough for the purposes—that there was no telling when that rim might come loose from the cap, and the rim would be left on the jar or bottle and the cap would come away, making the whole thing worthless. So we started on a new tack and we have now developed a cap which is drawn and threaded at the same time. In other words, the punch goes down into the die and the cap comes out all threaded. It has been tested up to as high as 90 pounds. I understand that 30 pounds would be good enough for a test in trying to strip it. We are not experts in the closure field, but we are about ready to go into production on this particular cap.

C. P. MORGAN (Vulcanized Rubber Co.): In our endeavors to find substitutes for hard rubber compositions, we developed a composition of a powder molding characteristic, similar to the phenolic or urea types. Basically, this material is composed either of the redwoods or hydrolyzed wood pulps. We have successfully molded these compositions in our own laboratories and have run some actual production tests in the field. However, there are a number of various bugs to overcome, to meet the various production requirements of the molders themselves. However, we feel at the present time that we have advanced far enough that, with the general cooperation of the molders themselves, we can make this material perform and do the job that the present critical materials are performing today.

CHAIRMAN BROWNE: What has been done by anybody, anywhere, in the development of a plastic crown cap?

MR. COLE: There are many substitute materials that are possible for a screw cap that may not be possible at all in a crown cap. There have been at least five companies that we know of that have attempted to develop a thermo-plastic crown cap. Of the thermo-plastic caps that have been developed so far, most all of them will actually cap a bottle. That is, you can take your thermo-plastic material, heat it to a certain point, put it on a bottle, and we have seen all of them successfully contain the liquid or whatever you were trying to cap at the time. Now, then, how long it would do that job, and whether it would stand up under the various important tests to which it would have to be subjected, we do not know. It is claimed that it will.

Cold flow after a certain time will definitely have an effect on any thermo-plastic material. No thermo-plastic material is going to remain constant under the great variation of temperatures. And yet your pressure inside the bottle is going to be constant. So that you have a constant pressure but you do not have a constant material attempting to close it.

Any of the closures will seal a bottle. But whether they will seal that bottle under the actual rigors of automatic production and on standard machines, is another question. We know of two of them that actually claim it can be done, and they say they know exactly how they are going to do it. They claim they merely must heat the closure, either by steam, through an oven, or by an infra-red ray, and then build a special chuck which will take the thermo-plastic closure and roll it down over the bottle.

I rather accidentally ran across a thermo-plastic closure which was being made in Milwaukee. We went to see it and I did not recognize the material. I asked what it was and I was told it was a newly developed material. This much I can say to you: that the company behind the development is excellently financed and rather well known—not in the packaging business, but they do know these materials. Its base, as far as I know, is asphalt, a fibre, and some other material; and they definitely claim that it is not critical in any way—that they can and are today producing three tons a day of the material in the plant. They claim the material will sell at $5^1/_2$ cents a pound, making the production of a thermo-plastic cap about the same price as a metal crown.

One of the very largest brewers in the world, located in Milwaukee, had been working with these people. The brewers were so sold on the fact that a crown cap had been discovered and perfected, that they took a quantity of these caps, which were made on a two-cavity mold, into their plant. They converted one of their standard capping machines. They heated the business end or the roll at the bottom of this thermo-plastic cap by an infra-red lamp to a point where it would plasticize. I saw the chuck that was put on the standard capping machine, which in turn would apply the cap. They ran through 3,000 of these caps and capped cases of beer. I saw that—I saw the beer capped. They have now gone about the business of building seven additional chucks, which will completely equip an A-head capper. They have also ordered from the company a 100-cavity mold, which is now in the process of building. With that mold to produce the caps and with the chucks that they are building to put them on the beer, they claim that they have the answer. They claim they will be in production on that in a very short time—actually, a matter of weeks.

CHAIRMAN BROWNE: If a suitable and available plastic seal were produced for beer and other beverage use, how could the bottler get the special capping equipment required for applying it?

DR. A. H. WARTH (Crown Cork & Seal Co.): I might say that our contribution to the war effort today is in the manufacture of machine gun mounts and other items for the Army Ordnance. We are not at the present time manufacturing any bottling equipment whatsoever. We do not intend to manufacture any until after the war is over.

MR. DUBIN: I should like to ask the men who have experimented with laminated cellulose and paper closures, whether they have experimented with crowns for beer and beverages.

MR. CROTTY: We have not.

MR. PARSONS: The answer to that is no, as far as my own company is concerned.

MR. DUBIN: I have heard of some crowns being worked on.

MR. J. B. EISEN: Every closure manufacturer in the country probably has, within the last six months, made tests in their laboratories of both cellulosic materials and thermo-plastic type materials. To condense a test of that sort in a short period of time is almost impossible. We can readily put up samples in our laboratory and have them hold the pressures using thermo-plastic types of cap, but when the packages are bounced, such as takes place in the handling of cases on and off a truck or placing them in a place of distribution, leakage usually occurs. How important the leakage is, is something that the distributor and the bottler and packer will have to determine. It may be necessary to change the method of distribution entirely, or it may be necessary to prevent long hauls in connection with some of these new type seals. But the problem is specifically as I have just described. No short test will be final.

MR. ARNO NICKERSON: One pulp manufacturer that I know of has produced a resilient type of pulp, 75 points thick, laminated it with moisture-proof cellophane, and tried it out on carbonated beverages. The preliminary tests are only fair. There were quite a number of leakers at 120 deg. F., and I understand the internal pressure was 130 pounds. That type of cap, however, is under development and sounds to me pretty good.

There is an argument, however, in the paper industry regarding this principle: whether the paper closure inside the cap should be a hard, dense material or a resilient material to approximate the effect of cork. The pulp that I mention is made of a twisted fibre which does hold its resiliency fairly well.

W. R. McGOWAN: There is a question which I believe most people are interested in: where do flowed-in sealing compounds go as rubber reclaim gets tighter and tighter? We have worked out a substitute compound which we could apply at high speeds in our equipment, thereby not requiring any more labor, to the extent of 300,000,000 caps, in the last eight months. That, however, is now critical material. Whereas we are still getting from the WPB allocations of rubber wherever hermetic closures are needed, as far as essential foods are concerned, coffee and shortenings and similar products are not going to be allowed rubber. They are not going to be allowed tinplate or steel. They are not going to be allowed the substitute material that we did develop and thought we were all set on.

We have also worked on basic raw materials developed by the Department of Agriculture, soybean oil, asphaltums and other products which we can put into our flowed-in compounds and apply them at high speeds, thereby not creating an additional labor problem. We have developed sealing compounds not only for steel closures but for glass closures, for paper closures, and all of them can be applied or handled on our equipment which runs at 90 a minute. We have enough of that equipment out to handle about 2 billion closures. It is our job to keep ahead of the WPB in calling them critical.

CHAIRMAN BROWNE: To what extent are plastic closure manufacturers willing to adjust or revise present-day molding equipment to use a substitute plastic material?

GEORGE SCRIBNER (Boonton Molding Co.): We do not know the figures of the glass container association, but we thought we were going well when we made 600,000,000 individual closures in one year.

If you put a substitute material in, the bad result on the molder is going to be that your curing time is probably going to increase two or three times over, which means that the production from existing equipment will be cut to about one-third of what it is. That is why molders do not like any of the substitutes they have seen come up so far.

There seems to be plenty of urea around. Phenolics are

restricted. The larger the cap, the more material is used. There is a stop order on plastic molding presses unless you have a very good reason for them. About 80 per cent of the molding presses today are in war work. From what I have seen of new business coming up, it will not be very long before some of the presses that are molding closures are going to be taken out of that and tossed into straight war work.

You cannot get steel for tools without an AA-1 rating. I should say that probably all the tools to produce molded closures are busy today. People talk about standardization. It means, undoubtedly, throwing out some of the tools for the odd sizes and evidently replacing them with other tools for standard sizes.

I do not think that the molded plastic closures are going to do very much good, because of the lack of volume and the fact that you cannot increase that volume. I think you would be wise to use them on the smaller size bottles where you must have something like light molded closures.

I don't know but that perhaps all of these paper pulp cardboard caps will be easier to make in the larger sizes and very difficult to make in the smaller sizes, if you get down to around 20 and 22 millimeters. So that if you can follow Mr. Blount's suggestion and organize your demand for the small size closures with a reason behind it, you probably will have no trouble. But I do not see how you can expect the molded closure manufacturers to expand their production to take care of any of these enormous quantities that you are talking about.

CHAIRMAN BROWNE: With the prospect of changing the material used in making closures, will it not become necessary to give much greater attention to the lining materials in connection with such closures?

J. B. EISEN (Ferdinand Gutmann Co.): Substitute closures of the cellulose type are permeable. That is, they will allow vapors to pass through. Steel, as used in metal closures, is not permeable. Therefore, the problem in connection with cellulosic materials, even though they may be coated with a so-called impermeable coating, which does not exist as compared to the impermeability of steel sheets, is a real one. Cellulosic materials will not compare in that characteristic to a steel sheet. Hence, some provision must be made in the liner to be used in connection with such a cap, in order to arrive at a good seal.

It is becoming more difficult every day to get such types of liners. When we have one material properly substituted, or when we think we have it properly substituted, that particular coating material is quickly eliminated by action of the WPB. That is quite natural to expect.

Another particular additional difficulty which has to be encountered—the flowed-in rubber compound or its substitute—does a job of sealing the package with a vacuum using a metal cap. If the same rubber compound were used in a paper or cellulosic cap, even though the cap had been treated to make it impermeable, so to speak, it would not be successful. Of course, that is a special application, because it is vacuum packaging. But I think it will be an indication to you as to what you might expect in practice.

Other possible difficulties in connection with the making of cellulosic caps are: If cellulosic caps are to be used in connection with so-called standard C T or M C finish jars, they must be made in such a way that they will take the variation as indicated on the blueprints for variation in glass. That seems rather simple, but it becomes more difficult in handling cellulosic materials, due to the fact that the cellulosic materials must be shipped from the plant that manufactured them to the plant that is going to use them in connection with the packaging and possibly they will undergo all sorts of atmospheric changes such as additions or subtractions in moisture, as the case may be.

Carl Masson, catering manager of the Hotel New Yorker (center) discusses dehydrated foods with Chef Emil Wiolat, while Chef John Lavino stirs a dehydrated soup mixture. The New Yorker does not serve dehydrated foods, but this was a request by a special group to introduce these foods at a luncheon for guests at the Packaging Institute.

CHAIRMAN BROWNE: Will the packaging people consider closures that are not equal in finish to present-day materials but that meet other requirements, such as strength, water-proofness, gas-proofness and all of these other various tests that different products impose on a closure or packaging material? Will they accept packaging materials in the packaging field that are not up to former standards of beauty and appearance?

I think the public is miles ahead of us and that this is no time to worry about the consumer as to what he will accept, because the consumer will take it. The consumer says, "I will take anything that will help win the war." I think that is something for us all to remember.

The other question is this: Can the Packaging Institute assist the WPB in coordinating all packaging activities?

Those questions are for you to answer. Are there any more questions from the floor?

RICHARD T. OETERS (Mangel-Scheuermann & Oeters, Inc.): I would like to ask Mr. Cole, in particular, if that Milwaukee cap that he speaks about has a liner.

MR. COLE: Yes, it has a liner. In fact, it had a paper liner coated with a vinyl resin.

MR. OETERS: Does anybody know of a plastic cap on the market without a liner that is being experimented on and that is apparently satisfactory?

MR. SEEGAR (Raymond Loewy Co.): About three weeks ago we capped two bottles that were exposed to 125 degrees of heat. They still seem to be holding.

. . . The session adjourned at 12 noon. . . and the delegates attended a luncheon at which a menu of dehydrated foods was served. This was arranged by Hal W. Johnston. Foods served were supplied by Sardik Food Products Co.

America is geared to feed 135 million people. Right now, this country must feed 225 million people. This makes a serious demand on the Western Hemisphere.

FRIDAY AFTERNOON

Packaging and the Problem of Feeding America.—HAL W. JOHNSTON, vice-president and director of sales, Stecher-Traung Lithograph Corp., Rochester, N. Y., presiding.

Members of the panel: A. VERNON SHANNON, Westfield River Paper Co., vice-chairman of the Packaging Research Committee of the Packaging Institute; FRANCIS L. WHITMARSH, president, Francis H. Leggett & Co., representing national food distribution; E. J. O'CONNOR, sales manager, Continental Can Co., and R. M. ROBERTS, sales manager, Atlantic Division, American Can Co., representing can manufacturers' viewpoint; DR. A. H. WARTH, technical director of the Crown Cork & Seal Co., closures; J. D. MALCOMSON, research director, Robert Gair Co., representing the Folding Paper Box Assn.; DR. H. A. BARNBY, director of the Packaging Research Division, Owens-Illinois Glass Co., representing glass container industries; DOUGLAS McBEAN, consulting engineer, Rochester, N. Y., representing food processing engineering; C. W. BROWNE, editor, Modern Packaging, representing the trade press; DR. R. S. HOLLINGSHEAD, asst. chief, Chemistry Research Div., Dept. of Agriculture; F. C. BASELT, research manager, Atlantic Division, American Can Co.

MR. SHANNON: Every one of you has had a problem that is akin to a problem of someone else. Our Research Committee of the Packaging Institute requests that these problems be submitted to us in as detailed form as possible. We have an outline of questions. Anyone who has a problem that he would like to have studied may write in to our office and ask for our questionnaire. Fill it in and return it to us. If its nature is deemed by us to be essential, we shall immediately work on it and make a report to all our members. I want it distinctly understood that this service is open to anyone, whether they are members of the Institute or not.

The membership of this committee takes in producers of food, converters of packages and the purchasers of these packages. We have likewise available to us capable laboratories in the number of six, that have had wide experience. They can help you, and we want to help you. Call on us. (Applause.)

MR. WHITMARSH: What the distributor wants to know from you gentlemen is, what are you going to do to replace those products that are off the market?

MR. O'CONNOR: Being in the metal can business, there is not a great deal to say. The axe has hit us heavily, particularly on the general run of our business. We are finding it difficult to get priorities for equipment to do the developing we would like to do, to find substitutes. However, if there is any answer, we hope to find it.

MR. ROBERTS: The matter of converting from metal to fibre rests pretty much in the hands of our friends in Washington in determining how essential the commodity to be packed is. That is weighed against the availability of the amount and type of equipment needed to convert the manufacturing lines.

DR. WARTH: Today we have quite a problem in cutting up a lot of junk plate to make crown caps. The bottlers, including the brewers, pay $6 per gross for these No. 10 can bodies, send them in to the crown manufacturer, and he stamps crowns out of them—about 44 crowns to each can body. In the manufacture of closures for foods, our problems concern mostly the problems of conversion—that is, closures that are used for packages where the foods are transferred from cans to glass. In that connection we are confronted with tin shortages and the necessity of manufacturing closures of black plate.

MR. MALCOLMSON: Our greatest worry is the job placed on our industry to develop a package that will hold liquids or semi-liquids. We have gone along almost for generations, assuming that the tin can had the liquid situation well in hand. Now we have suddenly been asked to concentrate, 20 years of research into perhaps 20 weeks, in developing a package that will hold liquids or semi-liquids.

We can make some very impressive demonstrations on a handmade scale, in the packaging of liquids, by placing the liquid in the heat-sealed bag, and putting that in the carton. It has not yet been produced in large enough volume, however, to prove what is going to happen when it is produced in large volume and shipped around the country.

In addition to the research work that is being done by the individual companies, our Folding Box Association has appointed a technical committee with enough funds to provide themselves with the proper testing equipment.

Our principal line of research at this moment is along the direction of papers and cellulosic materials of all sorts to make bags, either heat-sealed or not. I would like to speak at this time of the fact that we are still looking for any new film material that will make a bag. If any of you gentlemen have anything, or if you know of people who have material of that nature, it should be known to both the Packaging Institute and the Folding Carton Assn.

DR. BARNBY: The extent to which the glass container industry can take over or fill in any gap that might be made by other more critical and less available containers will depend on three things. First, on clarification and definition by Washington as to what assignments the glass container is to take over. Second, on a reasonable time or advance notice to make ready for new uses or applications of glass. Third, on the necessary materials as and where required for conversion of machinery where it is needed, and the necessary closures and rubber in those instances where a sterilized automatic package is used.

A lot of work has been done on paper closures, and you will see, before very long, the outcome of that concentrated development effort from many sources.

MR. McBEAN: I think it is pretty well agreed that within a relatively short time it will be not only necessary but urgent that we do something on dehydrated foods in the domestic market. Right now it is quite difficult to get any equipment to make material for domestic use. The only material that can be secured has been in use since before the war.

MR. BROWNE: The business paper today is more than a mere bystander. The business paper must exercise a perspective. Its duties consist of observation, first. Then selection. And then reporting the facts from an engineering and technical point of view. If you give to your business papers, your business papers will come back to you more valuable than ever.

DR. HOLLINGSHEAD: The work in which I am interested has to do with the development of methods of dehydrating foods, and, as a corrolary, the trial and testing of containers for those foods, so that they will preserve as long as possible whatever the process has been able to preserve of the original raw material qualities. We are highly appreciative of the metals situation, both as to the production of dehydration machinery and as to possible containers. Our work is largely confined to the development of methods of dehydrating, and a study, as I have said, of the containers in which these dehydrated articles may be maintained as long as possible without loss of their original qualities.

MR. BASELT: Food is being grown and cans are still available in large quantities for essential foods. The research departments are still functioning and making certain that food is packed to the best possible advantage. We are still doing all we can to help our customers and other people's customers in the conversion to other packages. But the problems are so complex that we skip them at this point.

DISCUSSION

CHAIRMAN JOHNSTON: What new containers for food may we expect, Mr. Baselt?

MR. BASELT: The key to the manufacture of new containers is the essential quality of the product to go into them. It has been very difficult to obtain any steel to retool, even though it be a small fraction of the original investment, say in the can manufacturing line, to convert from steel to paper. We can make no promises, since we are guided by Washington.

CHAIRMAN JOHNSTON: Has a non-critical container for all dehydrated vegetables been approved by the Quartermaster, and is it being used for all vegetables?

MR. SHANNON: That was more or less determined in Rochester last week. I want to tell you they certainly put paper through a lot of paces! I would just like to make a comment of my own. After I saw some 25 different combination paper packages completely battered to pieces in the tests that the Quartermaster Corps placed them under, I asked the question: "If none of these paper packages are right, what will you use?" and I received the reply, "Well, we will have to use tin cans, because we have been using those for a long time, and they are good."

Then I asked, "Did you ever put tin cans under the same tests through which you have put these paper packages?"

And the answer I received was, "Oh, no, we haven't done that. Why should we? We know that the can works."

It was evident that not even a tin can could possibly have gone through the tests that they thought paper must go through in order to be satisfactory.

I bring that out because I think it has a lot to do with any substitution problem. It should be treated intelligently.

The last word from the Quartermaster Corps in Chicago, for bulk packaged, dehydrated foods, is a three-way package, quantity approximately 5 gallons. It has an outside fibre container. It has an inside bag that is of a heat-sealed variety, manufactured from 4-ply material—kraft, a laminating agent, lead foil, a laminating agent, kraft, a laminating agent, and cellophane that is subsequently coated. That is made into a heat-sealed bag. On the inside of that is another corrugated carton.

You wonder why all that fol-de-rol to pack an innocent-looking product, but dehydrated carrots or potatoes are as sharp as razor blades. If you dip your hands down into a barrel of them, they will come out lacerated. That is one of the problems, and that is how they have answered it.

CHAIRMAN JOHNSTON: Isn't the answer to individual package shortages for dried foods the dispensing from a bulk container?

MR. MALCOLMSON: I don't know the correct answer. It does seem to me, however, that, after the trouble that has been gone to in the dehydrating of foods and the many cautions that surround it, there might be some danger in dispensing from bulk.

CHAIRMAN JOHNSTON: If I can repeat with fair accuracy what Mr. Throckmorton told us at luncheon yesterday, the investigations of the Wharton School of Business Administration at the University of Pennsylvania indicate that it costs more money to deliver to destination in the bulk package, and then have to take the product out and wrap it in individual portions, than to package in the first place.

MR. WHITMARSH: May I say a word on that? There are two points on dehydrated foods which come up. One is the old question of sanitation and sanitary handling, especially on the part of a retailer who is handling something that he has not had before. (I am presuming that dried potatoes and things of that sort are meant here, which normally have not been sold in grocery stores.) The second point is that the housewife is not familiar with how to prepare them unless she receives a package with instructions and full information

on exactly how to cook them. The results would be disastrous, in most cases, if she did not have written instructions.

Mr. McBean outlined the dehydrated picture in 1917–1918.

CHAIRMAN JOHNSTON: How about the nutritive qualities?

DR. HOLLINGSHEAD: In general, there seems to be reason to believe that the properly dehydrated product, properly protected, can be put in the kitchen of the housewife or into the camp mess in a condition which compares favorably with practically any other means of moving food into the place of consumption. That is rather a broad statement. Dividing it into its individual parts, particularly into the several vitamins, it will not hold for every one of them. But, taking them as a group, I think one can safely say that dehydrated foods are a perfectly satisfactory dietary supply.

CHAIRMAN JOHNSTON: For the bag-in-carton, does the carton maker furnish the bags? What are the pros and cons of buying bags from the bag-maker, versus buying them from the carton-maker?

MR. MALCOLMSON: The carton industry feels at this moment that the best way to handle the proposition, where the bag is separate from the carton, is for the carton maker to work in close collaboration with the bag maker. I would suggest that the salesman for the carton maker and the salesman for the bag maker go in to see the customer at the same time and let the bag be sold to the customer as a separate sale. In that way, the bag maker will know just which filler to use, and he can assume the responsibility of making a proper bag and of which the customer can feel sure.

That seems to be the status at this moment, except, of course, for those cartons that have a bag built right in them. This is a question that has interested our industry so much that I would welcome eagerly right now any thoughts that you in this audience have on the subject. I think it is a question that almost any packager of foods is vitally interested in. (No response.)

CHAIRMAN JOHNSTON: If paper containers can be satisfactorily substituted for critical materials such as metal and metal-closed glass, will there be sufficient paper available?

MR. SHANNON: Unless there is a very intelligent application in the use of paper, my answer to that question is no, there will not be enough paper available. That is a very dangerous answer, but it would be my opinion. Until some definition of essential end use is given by an authority for paper, there is going to be a shortage. Deliveries are going to be bad.

CHAIRMAN JOHNSTON: Will you answer this other question also, Mr. Shannon? How can our search for substitute materials be simplified and save duplication of efforts?

MR. SHANNON: I think most of us like to hide our light under a bushel. In normal times it is good practice, and is good competitive stuff. But in these days everything that you have a proven application for, you should seek an outlet for the delivery of that information to your confreres in business. Remember that most of you have mutual problems. To get just a little selfish on this thing would be unfortunate. Remember my opening words relative to the Research Committee of the Packaging Institute. We want very much to save duplication of effort in order to speed up the findings on all problems.

MR. DAVIS: I notice that the title of this session is "Packaging and the Problem of Feeding America." I assume that is domestic, and I am wondering how much processed food is going to be consumed domestically, and whether there has been any discussion along that line. I know that for the foreign armed forces it is unlimited. How much will the average housewife, who is not used to this, consume these kinds of food?

CHAIRMAN JOHNSTON: Dr. Burton, will you speak on that point?

DR. L. V. BURTON (editor, Food Industries): I can summarize my own thinking on that. You have a situation which indicates that we must supply a population equivaient to about 225 million people. We are geared right now to produce for about 135 million people. That makes a very serious demand on the Western Hemisphere.

If I may have another second, I would like to say that the only reason, according to my calculations, that there is no food shortage in this country, any more than we have it now, is because we do not have enough ships to send the stuff abroad.

CHAIRMAN JOHNSTON: How are you going to educate the people to prepare properly the new types of dehydrated foods?

MR. WHITMARSH: I think the packaging that you put out must be very clear and detailed in its instructions. I have recently been looking at some different packages of soups. Some of them just say, "Put this package in a quart of boiling water, cook for ten minutes, and serve." We tried that, and I don't think that brand will exist for very long. You have to go into a little more detail today in telling a woman to put in some butter, or seasoning. You must give more details as to how to handle dehydrated foods.

If you are going to put out a consumer size of dehydrated products today, bear in mind that unless you can put out a product that is at least equal to or better than the can or glass package, the dehydrated package is going to disappear from the market.

CHAIRMAN JOHNSTON: Mr. O'Connor, is the present tin salvage campaign likely to afford us much relief from the standpoint of increasing our volume of available tin cans?

MR. O'CONNOR: I think there are plans afoot that will give a measurable relief. It involves a number of new de-tinning plants around the country, and, with these, it won't be necessary to go to the trouble that we have to at present on the question of cans.

CHAIRMAN JOHNSTON: Dr. Warth, are crown seals made from reclaimed metal sanitary and for what reason?

DR. WARTH: Crowns made from reclaimed tin are sanitary. The question arises, however, whether these re-use crowns (the old tin bottle caps with used cork) can be cleaned up sufficiently to make them sanitary for the sealing of beverages. It does seem to me a bit risky to gather up promiscuously bottle caps from all sorts of places, many of them filthy, and try to reclaim them and make them sanitary for reuse.

MR. O'CONNOR: You refer to the cork discoloring and not the shell?

MR. WARTH: Yes. There is no reason why the shell should not be reused, from a sanitary angle. Originally, the bottlers had tinplate crowns to work with. Now most of the crowns are of blackplate. Generally speaking, when they pick them up from the stores, they are quite rusty and by the time they get through washing them and cleaning them, they are more rusty. The whole problem does not seem to be feasible of solution in the matter of re-using the caps.

DR. BARNBY: Are there not some state laws, such as in Ohio, that preclude the re-use of any closure on packages of food?

DR. WARTH: Yes, there are several state laws that preclude the re-use of these closures. But, on the other hand, there are some localities that have approved their use. In one of the cities of Kentucky they have approved of their use. Some bottle caps were gathered there and subjected to rather severe treatment with sterilizing solutions and the product from the standpoint of the city health authorities was quite satisfactory. However, these caps might have been collected under very carefully arranged conditions. For instance, the Coca-Cola Company has coin boxes where you put a nickel in the slot and get a bottle of Coca-Cola and then the cap goes right into a closed box which is provided, and which keeps them away from dust and dirt. It is conceived that a cap of that kind might be reclaimed without much danger. But you can see what is likely to happen to caps that are picked from floors.

CHAIRMAN JOHNSTON: What work has been done to adopt a standard test for paper, treated or untreated, laminated or not, to determine its moisture-proofness, grease-resistant properties and so forth, after the sheet is folded, crumpled, creased, and otherwise formed into a shape for food products? There are normal operations involving fractures which would influence the choice of paper.

MR. SHANNON: Test procedures for the moisture resistance of paper have been developed carefully over a period of the past 20 years. I would say that within the past 3 years very definite methods have been developed that will make accurate comparisons between all membranes, no matter what their basic material or structure.

There is a test that has been developed called the Southwick test. (There is still some controversy that the test proves the fact.) But there is the Southwick test for membrane testing, and then there is the Southwick test for ultimate package testing. Many materials are eliminated in the membrane test. In other words, if a sheet passes the membrane test, then it is subjected to the package test. After a membrane has proved sufficiently satisfactory to offer a usable function, it is then converted into a package on the machine, is filled with the product to be tested, and placed under controlled test conditions. I might say that the whole test procedure of the Southwick method is available through the Packaging Institute. I might further say that unless you can get a very high priority you cannot get any of this testing equipment. We shall, however, be very glad to make the tests for you.

MR. BROWNE: I see Bob MacDonald, secretary of the Technical Assn. of the Pulp and Paper Industry. I wonder if he could not shed a little light on that subject?

MR. MACDONALD: That is a question which is highly controversial. The Technical Assn. has devoted most of its attention to developing tests for film—the flat sheet of paper. On the two tests that were mentioned, one is the water vapor permeability test. That has been developed after 5 or 10 years of very intensive work. Then we have another test, which is the so-called turpentine test for measuring the grease resistance of paper.

The Southwick test is new. Those of you who have seen the November issue of Modern Packaging will note that that is thrown right into the pool for a free-for-all discussion. We want to get everybody interested in looking into this rather thoroughly and see if we cannot come out with a test that is satisfactory, particularly in this emergency period.

One trouble with the Southwick test is that there are very few Southwick testers. With the job to be done, you need a great many pieces of equipment to get results.

MR. SHANNON: I would concur in everything Mr. MacDonald has stated. However, I issue a warning: Beware of Greeks bearing gifts! I want to tell you that within the past 10 years there have been all sorts of claims placed for the moisture permeability of all kinds of structures and their report readings are in identical terms that the Southwick test or that the TAPPI test might be given in. You have to know the conditions under which those readings were developed. I wish to warn everyone here on that point.

CHAIRMAN JOHNSTON: What is a successful package for shoestring potatoes? Has any such package been devised or is it about to be perfected?

MR. STEVENS (Benjamin J. Becker Company): There is a package that has been used for a period of the last year for shoestring potatoes and I believe the man who produced it is in this room now. Also, those packages are going to continue to be used for shoestring potatoes. But if you want to keep your potatoes for so many months, if you try to reach the ultimate, to keep them in paper for a year or two years, I would say that no package has yet been devised to do that. However, the packages developed right now will keep the potatoes for from 6 to 8 months.

CHAIRMAN JOHNSTON: What are the specifications for that bag and how is it treated in the processing?

MR. STEVENS: It is a bag-in-box. Secondly, it is completely heat-sealed. It is MSAT cellophane and glassine with various degrees of the weight of the stock and that is available for civilian use. At the present time, packages made of various combinations of glassine, with heat sealing, are being used.

CHAIRMAN JOHNSTON: What is the future of a package for coffee?

MR. MALCOLMSON: Not that I want to toot the horn of our own industry at all, but we think the ideal package for coffee is a nicely printed folding carton with lots of shelf appeal, fitted with a bag inside, and not necessarily hermetically sealed, but one that will protect the coffee during the normal life of it. I think the A & P Tea Company helped to spread a bit of sound information—that the cheapest coffee can be better than the most expensive, if that cheaper coffee is freshly roasted, ground at the store and used that night. We feel that shelf life on this point is not going to be as long as it has been in the past and therefore the answer, in our opinion, would be that the folding carton is the ideal package for coffee.

CHAIRMAN JOHNSTON. How suitable is silver as a substitute for tin in making cans for food preservation?

MR. BASELT: In the use of tin for ordinary tin cans, its use occurs in various ways. Tin first has a protective action

on the iron. A coating of thin tin, about .00007 inch thick, works chemically and not physically. In other words, it is not an insulation, so the steel won't come through. There are thousands of pores in it. For that purpose we have not been able to get much help from silver. Tin also appears in a tin can in the form of the solder. For that purpose, silver has done a swell job.

CHAIRMAN JOHNSTON: Has a uniform package been approved by the government for the packing of 73 million pounds of frozen vegetables called for by the Army in 1943?

MR. BRACKEN: I don't think they have made any changes yet, although for use by the Army (which is going to take a good portion of those food products this year) undoubtedly something will have to be done to make a different type of package from what we have had.

CHAIRMAN JOHNSTON: Why?

MR. BRACKEN: I will put it differently then—modifications of that which already exist will have to be made.

CHAIRMAN JOHNSTON: Again, why?

MR. BRACKEN: To take care of the size and conditions necessary for handling, which is much different from the way frozen foods have been handled in the past.

CHAIRMAN JOHNSTON: You don't anticipate their being dumped by parachute into the Solomon Islands?

MR. BRACKEN: No. They probably won't go out of the country.

MR. McBEAN: All the questions so far have been good ones, and I think it is time for someone to put a screwball question in here. I am wondering if anyone has tried putting to work the water vapor that leaks through a package. I don't know whether there are possibilities in it or not. It has been discussed. I discussed it with Mr. Pitman in Rochester last week. The idea is fundamentally this. If you have two membranes (let us consider the inside membrane as cellophane and the outside membrane as kraft paper) and you laminate them with gelatin, and in the gelatin we mix silica jell, and with the silica jell, some plaster of paris or cement (the idea being that your gelatin will pick up water vapor and hydrolyze your cement. Then you can utilize the water on the way through, and make something out of it. I don't mean to infer you could do it with just that combination, but I think the idea may have some merit. I wonder if any work has been done along that line?

MR. MALCOLMSON: I think that it is a very concrete suggestion.

CHAIRMAN JOHNSTON: One more question for Chris Browne, because he proposed it: Will the present situation deprive the packaging and marketing industries of this country of the incentive to confine packing to one trade name?

MR. BROWNE: I think in times like these our first consideration must be the main objective of winning the war. But if you go a little deeper, I think you will find that question strikes at the roots of the American economic structure.

Branded merchandise or the unit consumer packaged merchandise is, in a way, representative of American individuality—freedom of enterprise. It seems to me that that is the fundamental philosophy of our economic structure—the individual's right to go into any line of business he wishes to engage in, and to make a bid for the support of the consuming public on the basis of the service and satisfaction rendered.

While we must lend every effort we can to the first job of winning the war, we also should endeavor, as best we can, to maintain individual brands, because of what that means in our economic structure.

CHAIRMAN JOHNSTON: Are there other questions from the floor? This, then, is the concluding session of the program of the Packaging Institute, and I would like to pay tribute to this audience for its kindness and indulgence.

I want to speak particularly of this marvelous exhibit that Arthur Allen has put on. I think it is only fitting that tribute be paid to the hard work, uncompensated, except for the personal satisfaction of having gathered it together, so that all who attended this conference might see it, in bringing together this fine group of packages. I cannot help but think that Yankee ingenuity will solve the problem of producing the necessary packaging to feed America.

Credit: Illustrations courtesy OWI, Chase Brass & Copper Co., Supermarket Merchandising, Hotel New Yorker, J. I. Case Co.

SHELL FOR POWDER

(NON-EXPLOSIVE)

THE tin can is fast becoming the vanishing American package. In fact, its disappearance from certain industries has occasioned a good deal of worry.

This problem in packaging—to discover an effective replacement for the dwindling tin—was a challenge to Burt's development engineers. They went to work, and the result is a paper container with an accurate sifter top that does not consume even a fraction of an ounce of metal. This container is completely functional for holding and dispensing tooth powders, talcum powders and similar dry products.

This is one of the contributions to war packaging made by Burt engineers to "Keep 'em Rolling." It is a fine example of the creative packaging service available to Burt customers in peace and war. Others will appear in subsequent issues of Modern Packaging.

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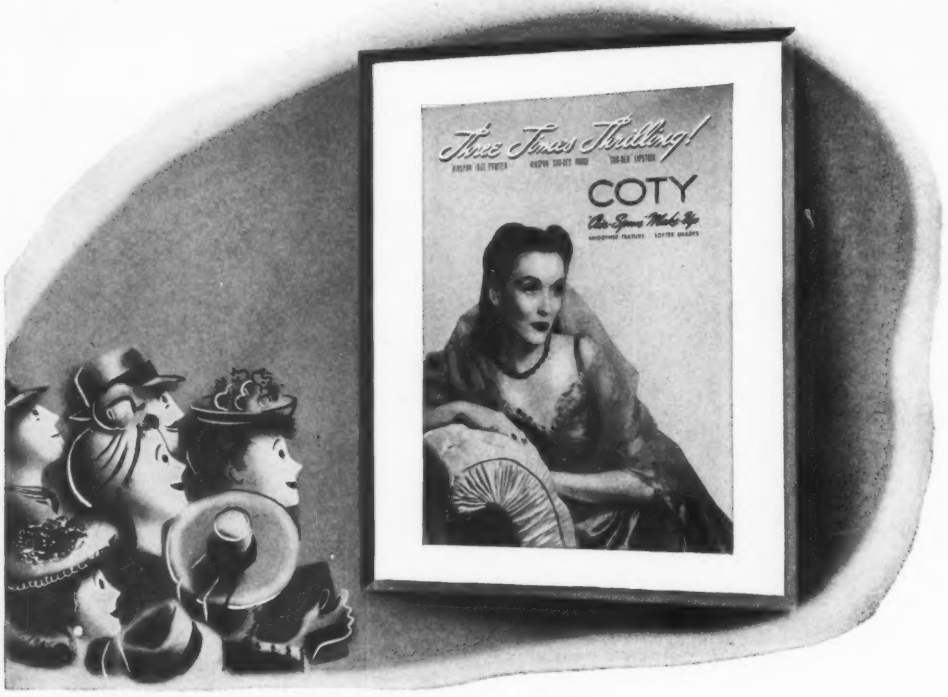


We call this one "Mrs Miniver"

"Mrs. Miniver", the movie, played eight weeks at Radio City Music Hall—a record. This Coty display stayed five weeks in the windows of some of the best drug stores—another record. Some people thought the Coty girl must be a member of the druggist's family!

These long showings were a deserved compliment to Coty. Also the display. (We'll take a small bow, too.) But the real reason for the long life of this Coty girl was—nasty word—shortage. Toilet goods and cosmetics manufacturers have cut down on displays. There aren't many in the class with Coty's these days.

Some advertisers thought they were being patriotic when the alleged board shortage was first alleged. Others thought they would clip the display budget for the P & L ledger . . . In consequence, there are more good windows available to good displays than ever before; and any good display gets a longer showing, has a chance to do more work, pays a larger return on its cost.

There never was a better opportunity for good display . . . And Einson-Freeman makes no other kind! Don't worry about the kind of display you need. Just let us know you're in the market—and we'll take care of the idea, the art, and the production. Today is a good time to call us. And why not?

1941

1942

DRUG STORE DISPLAYS—
A. C. Neilson Co. forecast the decline in Feb. 1942, for 15 classifications.

Einson-Freeman Co. Inc.

SUPER-DUPER LITHOGRAPHERS

STARR & BORDEN AVENUES, LONG ISLAND CITY, N. Y.

Goodyear continues to supply point-of-purchase advertising material even though its plants are engaged wholly in war work. The company not only keeps its name alive by this means, but it also helps to build up support for the nation's war program.

Display for off-the-market merchandise

*by Edward T. Sajous**

Soon after merchandise shortages began to threaten, the idea was expressed in some quarters, "Store display is of no use if you haven't any merchandise to sell."

At first reading or hearing, that idea sounds logical enough: one important function of display is to accelerate movement of active goods through retail outlets. If you have no goods to move through retail outlets, of what use is display?

A number of supplementary variations were added to augment and embellish that main theme. Among these were the following: First, manufacturers with no merchandise to market can do an institutional job and keep brand names alive in the consumer mind with media advertising but not with display. Second, retail merchants will not give room to a store display offered to them when the merchandise for which that display was produced is unavailable.

Much has been said and written about the present position and future of store display during the past few months, in relation to the wartime merchandising picture. Advertisers and members of the display industry alike have expressed natural concern over the situation. As far as it is known, however, no one has made to date an objective, systematic, cross-industry effort to obtain the facts and to arrange them in orderly fashion in order to gage the problem with a view to either discarding display as a dead issue for the duration or to giving it intensive consideration as a potentially efficient means of accomplishing purposes other than accelerating movement of merchandise, if properly adapted to needs, demands and limitations of this global emergency.

As nearly as can be gathered, most of the thinking and activity in this connection have been on a basis of personal opinion or have been guided by we'll-do-what-our-competitor-does thinking, without too much close study of possibilities, ideas and opportunities involved in what, at first glance, might appear to be just another field laid barren by the consuming fires of war.

As the primary purpose of this organization is study and research in store display and is the whole matter of display against the background of war is of natural, essential impor-

* Executive secretary, Point of Purchase Advertising Institute, Inc.

tance to us, Point of Purchase Advertising Institute set out, about two months ago, to get a factual picture for general use and consideration by all those concerned with this merchandising form.

We directed our study toward those who, in our opinion and as a matter of fact, would have the most practical, authoritative and soundest thinking to offer. Among those who cooperated with us in giving time and thought in answering our questions have been advertising, sales and promotion managers of nationally advertised merchandise; trade organization and business paper executives experienced and keenly interested in retail store merchandising; sales advertising and merchandising heads of chain groups and independent outlets and merchandising specialists in the magazine, newspaper and radio fields. In all, about 150 men in those departments of advertising, merchandising, promotion and sales were contacted. Most industries selling merchandise through retail outlets were included, among them being, food, drugs, candy, liquor, cosmetics, tobacco, beer, soft beverages, radio, watches and clocks, silverware, hardware, household supplies, soap and toilet accessories and mens' wear.

Wartime planning

Some of those with whom we talked are of the opinion that all advertising is facing greater and greater reductions as more and more elements affecting supply of merchandise, packaging and transportation come into being and that display is due to suffer more heavily than any other form. Some of those with whom the matter was discussed in various industries are decidedly of the opinion that display has no place in wartime advertising planning when goods are severely restricted or are unavailable.

As one authority put it, "Point of purchase advertising has usually been last in budget allocations. Now, I believe it will come first—in budget reductions."

However, on the positive side, here are some directly quoted statements from advertisers in industries in which merchandise is now scarce or off the market and which bring out factors in thinking most commonly and most constantly encountered:

"Our product is totally restricted from the public market. At the same time, we are strongly sold on the idea that we must keep our brand name alive and that our dealers must be given consideration. We could do the 'brand-reminder,' job through media alone, but if we did our dealers would resent it. We know, because we spent a lot of time finding out just what the reaction would be if dealer support were eliminated. Therefore, we are keeping our dealers supplied with high-quality displays tied into patriotic themes and which, at the same time, remind the public of our name, point out that this particular dealer was and will be again identified with our brand and that, in the meantime, here is a good, dependable store in which to buy other merchandise of various kinds, unrestricted by shortages or government demand."

Another manufacturer reported, "Retailers realize the prestige value of our packaged, nationally advertised products —now off the market. It is an old name and a good one. In a questionnaire-survey we conducted, 2,200 retailers, from coast to coast, asked for continued supplies of timely, war-theme display. They want to be identified with our line and are anxious to have people know that they are doing their share in publicizing wartime appeals such as for purchase of War Bonds, physical fitness, conservation of shortage-threatened materials and recruiting."

This company, also concentrating its plant production upon government orders, has developed its war display policy upon the following ideas, after extensive field study among outlets which formerly carried the line:

"Briefly, we are continuing to supply point-of-purchase advertising material even though our plant has been turned over to production of war materials because we want to keep our name alive and because we believe we are helping to build support for the country's war program. We think that, while media—which we also continue to use—has its advantages in helping to do the job, store display has qualities not possessed by magazines, radio or newspaper advertising."

Closely related to that thought, this statement expresses a point of view frequently brought out by manufacturers of off-the-market products still distributing displays:

"The brunt of our program to retain public and trade consciousness of our brand and to support government war campaigns has been placed upon consumer publications and industrial papers. However, just as it was sound merchandising to support and supplement media advertising with display at the point of sale when we had packages of merchandise to sell, so, we believe, it is good policy to follow the same principle when we have ideas to sell. We want to do the job, not only in a broad, general way, but right at the point where prospects and customers do their buying. We want to hit them with our brand name at the moment and at the place they are thinking in terms of purchase. They can't purchase our brand, but our store advertising makes them think of it. As normal times come again and we are able to supply merchandise we believe that their call for our brand will be automatic and natural as a result of our present program."

Manpower

Commonly repeated through our interviews and discussions, were additional slants:

"Manpower in retail stores is getting 'shorter,' all the time," some told us. "We are not entirely off the market but our merchandise is carefully allocated to dealers. We cannot depend upon busy, often over-worked store sales personnel to make proper, satisfactory explanations to customers wondering why they can't get all of our product they want. We are using display, among other reasons, to help do that job. . . ."

"The retail merchant is the influence which will finally decide whether our goods will move in volume or not. He represents the strongest influence in the whole picture. We're making every effort to keep his good will and we're doing it by designing and producing for him the kind of store advertising he wants. Just now, we are giving him material that helps stimulate and directs store traffic. In window material, we're doing everything we can to help him get more customers into his store. We know he appreciates what we're doing. Frankly, we believe that appreciation will pay dividends some day. . . ."

"Two main considerations have guided our store display policy. First, the presence of green clerks in stores, replacing those going into the services or high-paid war work, makes it difficult for a customer to get a correct answer when she asks for a package of our product—now off the shelves. Second, there is constant increase in self-service type outlets in which there are no clerks at all to explain when she looks for our product. We don't want her to think we have simply gone out of business for all time or that there's anything mysterious about our absence. We also want her to know that we are doing our bit in the war effort. We are doing that through use of educational display. . . ."

"There is definite prestige value to us to be identified with

leading, high-quality outlets throughout the country. We don't want people to lose sight of the fact that we produce the kind of merchandise those outlets sell. Our dealers feel the same way about us and they are glad to have our institutional material. . . ."

"Clerk shortage and inexperienced clerks make store display a tough problem for many retailers. Clerks have neither time nor experience to do a good job. We find that we can keep our brand name before the buying public right at the spot where the buying is done, and at the same time, gain a lot of dealer good will by providing attractive, wartime display that can be easily handled and quickly installed by the most inexperienced. Don't forget that dealers know value of windows. They want and will use institutional, reminder, patriotic or similar material if it's attractive and striking. . . ."

"All our display is designed to do is a novel 'related-item,' sales job. We have nothing to sell, at present, through retail stores, but our store advertising points out available merchandise related to our products which can be purchased even though our own is not there for the time being. . . ."

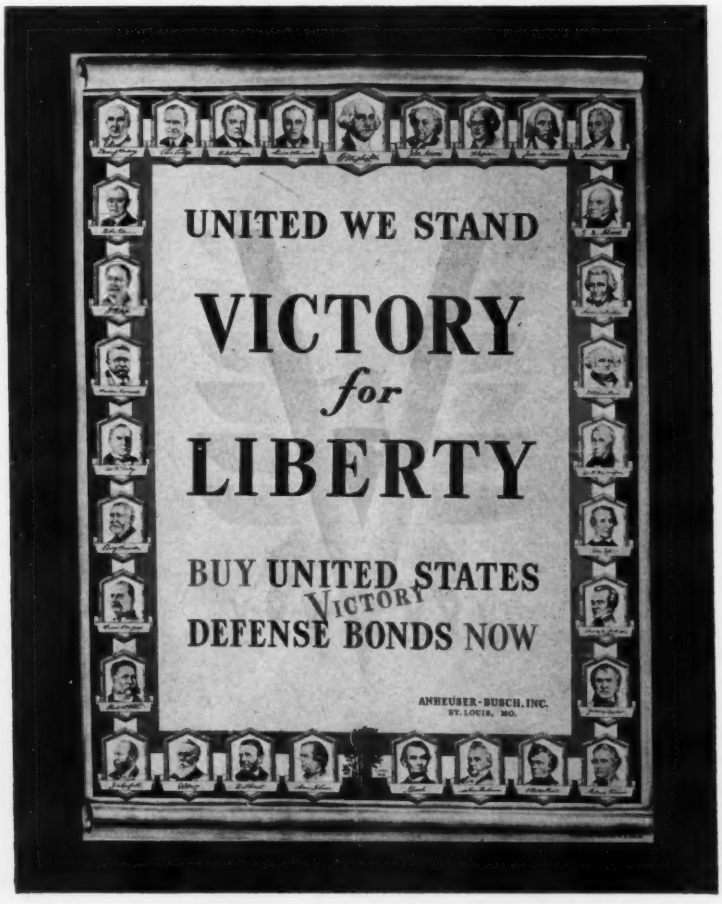
Many merchandising executives of companies with severely restricted or entirely unavailable products believe there is little use or value in store display. It is only fair to bring in, however, that in many such cases, such policy has been set up without a great deal of study of the possibilities, responsibilities or opportunities involved. On the other hand, most companies in a similar position of no-merchandise-to-sell which are continuing production of display, are doing so after careful consideration and investigation.

Commonest and most constant "reasons-why," expressed by merchandising heads of "off-the-shelf" products in connection with continuance of display production may be classified as follows: Brand name reminder; institutional advertising; prestige value in identification with top outlets; dealers goodwill; support government appeals and patriotic programs; supplement service of inexperienced clerks in explaining absence of merchandise, point out company's part in war effort, pledge to return after the war, etc.

Display has special values and specific functions not entirely covered by media advertising.

Opinion and observation of the majority of retail merchandisers, trade association and trade publication executives and others active in advertising and promotion interviewed on the general display situation, may be summed up, cross-section-wise in this way: Display is undoubtedly facing a trying period. Point of purchase advertising does not occupy the position in the merchandising setup held by other forms, and therefore, will be in danger of first and most drastic reductions in advertising appropriations. On the other hand, store display has now a splendid opportunity (*Continued on page 146*)

Left. Sohio uses this poster in filling and service stations. It supplements and supports the employee's explanations about absence of certain merchandise by recalling that we are a people at war. Right. Anheuser-Busch, Inc., is doing its share in publicizing wartime appeals for purchase of Bonds with this panel with a border of pictures of the presidents.



DISPLAY GALLERY

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1 This point-of-sale piece for Imperial Whiskey has humor and a great deal of human interest. With automobiles confined strictly to essential business travel for the duration, these two men on the tandem bicycle are timely and amusing. The gay spirit of the men has been caught as they go pedaling along on their way to the local fishing spot. A bottle of Imperial is shown prominently in the foreground of the poster. Display by Ketterlinus Litho. Mfg. Co.

2 A new weekly war display service known as "Victory News" makes its appearance in banks, stationery stores, grocery and a variety of other stores. Each week it depicts a specific story of the latest war news, using actual photographs from the battle and the home front. The photographs have been obtained from government and press association files. The service has been designed to meet the needs of all types of stores, the managers of which desire to give part of their window or other display space to help promote the war effort. The permanent wood frame can be hung or placed in a free-standing position. Displays and weekly service by Photo News Display Corp.

2

3 An educational window treatment for Sharp & Dohme products presents striking dramatic effect. It is an institutional type display built around the theme, "War brings epidemics." The various diseases and illnesses of childhood are listed categorically and information about immunization given briefly. The emphasis is upon preventive medicine rather than upon those medicines for treatment of the illness. The center portrait of a child is shown against a background of a battlefield. Picturization of the different Sharp & Dohme products is in a panel at the foot. Unit made by Brett Lithographing Co.

4 In celebration of the 450th anniversary of the discovery of America, Hiram Walker had N. C. Wyeth, famous painter of historical subjects, picture Columbus first sighting the land of the New World. Makers of Canadian Club upon request were glad to be able to provide a reproduction of this painting for display in dealers' windows as a special pictorial for the time around Columbus Day. After the display has served its purpose in the window, the picture, which is also framed, may be removed from the display unit and hung on dealers' walls as a permanent decoration. Made by Ketterlinus Litho. Mfg. Co.

5 Sherwin-Williams new window poster gives spot attention to a laughing baby in a painter's cap who is wielding a paint brush with a flourish. The three consumer sizes of the paint

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containers are shown opened and the paint trickling over the outside. The baby sits on an opened copy of the company's Paint and Color Guide, which is furnished to dealers for their customers. In the background are illustrated the many different uses for the paints. The exteriors and interiors of buildings are pictured in full color in order to present a realistic effect and give the observer an idea of just how the colors will appear in his own home. Display by U. S. Printing & Lithograph Co.

6 More and more of the self-service type of counter display units are finding their way into many different kinds of stores. Personnel shortages make these silent salesmen good pinch-hitters, welcomed by storekeepers. This easel-backed counter piece for Vicks new inhaler has its front surface lined with the ivory-colored plastic sticks, from which it is easy for customers to serve themselves. The containers are molded of plastic and are about the size of an ordinary lipstick. A label band carries product and other identification. The price is highlighted in a color circle. Inhaler sticks molded by Waterbury Button Co. from material by American Cyanamid Co., Plastics Div., and Plaskon Co., Inc.

7 To save both customers and clerks extra steps in filling grocery orders, Northwestern Yeast Co. has designed a Yeast Foam display carton. Distributed nationally, this counter salesman can be placed right beside the cash register, thus eliminating any necessity for running back to get a package of yeast, often forgotten or overlooked by shoppers due to its small size. The display, which contains photographs of a loaf of bread and an assortment of rolls, features the catch lines, "Saves time, saves money, saves waste." Copies of "Daylight Saving Recipes," originated in the company's test kitchen especially for this newly improved product, are inserted at the back of the carton. The display of Yeast Foam is aiding the sales of related items such as flour, shortening, etc. Carton made by Carton Craftsman Co.

8 Often a packaged goods display serves as a carrier for the packaged product. This process, however, is reversed in the new eye-catcher which rides the neck of the Colcombet wine bottle. In this case, the product carries the display. "Stopper-Topper" is the tricky but descriptive name which has been given the trimly fitting device. This display is particularly effective in that it incorporates an actual bottle of the wine and the latter becomes an integral part of the design. A weathered parchment color is used for the map of old France, a golden sunlight hue for the map of California. Display by The Manders Co., Inc.

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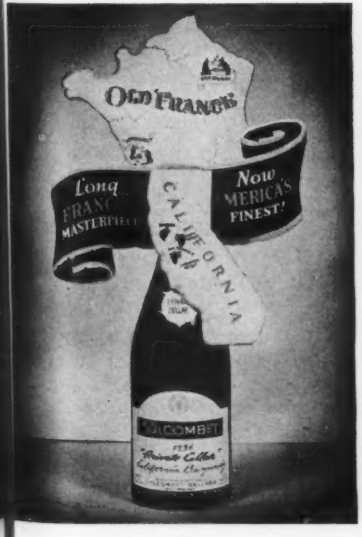

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1. Catsup display. Full cases are placed on the floor and on this base, unit is built to height of four cases. Panel cases are used with jumble bin on top. 2. Removal of front panels on these cases gives full visibility to the jars of vegetables.

Handling glass in stores

Tens of thousands of retail food store operators have met new mechanical problems in handling the steadily increasing number of wartime packages. The greatly increased use of the glass package, for example, means new types of display and stock methods. Dealers have been quick to sense the merchandising advantages inherent in the visibility appeal of the glass package and have used these advantages widely to speed up turnover of many products and to help the housewife plan her meals on a sight appeal basis rather than by reading labels. Suppliers of glass containers have prepared valuable aids in helping dealers to merchandise these glass packages. The following discussion shows how one leading chain has trained its employees in handling glass and contains some helpful suggestions for retailers on the arrangement of glass displays as presented by one of the leading glass container supplier.

This chain of western food markets has taken the lead in this procedure by setting up a school for all store employees. At these schools, each employee is taught the psychological advantages of foods shown in glass, the mechanical details of stocking them, stacking them in displays and on the shelf, as well as packing them for delivery and shipments.

Chief problems discussed at the school were as follows:

1. Carton weight and stocking. Retailers have learned immediately that case goods in glass, even though modern glass containers have a surprising sturdiness, require careful handling. Because of heavier construction of the cartons and weight of the glass containers, the working pace is slower in the stockroom. Cartons cannot be slid carelessly down stockroom chutes to bounce on the floor. Rule No. 1 imposed by the western grocer is "Carry every package and carry less!" Cartons of glass-packed products are separated from other products when kept in reserve and are carried one at a time.

2. Stocking display shelves. Store operators lost many early glass packages because clerks, accustomed to double armloads of cans carried from stockroom to shelf, attempted to carry glass packages the same way. Many of the packages wound up broken on the floor. Mass food retailers suffered because 4- and 8-case shelving had to be reloaded as fast as traffic serves itself. Breakage loss rose at the outset in most stores, until clerks were shamed or trained into a reasonable attitude toward the new glass packages. Greater care has been emphasized by simply limiting the number of glass packages of any size to be carried—6 quart jars at maximum, 6 pints, or 10 smaller sizes. Naturally stock boys must make many more trips, but they've learned quickly to handle glass with care. As war packages move to the dealer's shelves, it becomes necessary that he consider every new factor introduced to his work in terms of time versus breakage.

3. Mass and pyramid displays. These two familair aids to the American food retailer, as well as shelf stacking, underwent changes from the start. Dealers found that although glass jars of merchandise can be stacked one atop another as tin can displays, breakage sometimes occurs when they are dislodged, for example, from the vibration of passing traffic.

They discovered also that removal of one bottle might pitch half a dozen more to the floor with unhappy results. Loss of this kind is as often the clerk's fault as the customer's. Most grocers have handled glass-packed goods for years before the war and know the story well enough to guard against improper stacking. Solution preached to the western chain's employees was to build mass displays and tall shelf displays only when wide strips of cardboard, plywood or other material were inserted between the tops of one row of jars and the bottoms of the next. This, in effect, means shelves within shelves, saves time and will anchor each level of glass jars securely. Retailers are making these shelf strips themselves from discarded boxes and cartons, and spending more time in making up every display. Maximum display space and shelf contents are a "must" now, but careless stacking is out. Mass displays, retailers have found, are best made circular or cylindrical with a disc of cardboard or plywood narrowing in size toward the top in showing glass-packed merchandise.

4. Dusting and appearance maintenance. Most packaged goods in the past was dusted by simply swiping a cloth over the whole mass of a row of packages. This must be done more carefully with the glass jars, retailers have learned, to prevent dislodging them. Clear glass packages like other merchandise require a good dusting to appear at their best. In the western chain's "package school" clerks were assigned specific areas of jars to be dusted and told that the only practical method was to lift each jar off the shelf, wipe and return it. Retail merchants are learning that the cleanliness of their merchandise counts.

5. Effect of sunlight on foods. Some products packed in glass change color in sunlight or are affected by settling or in other ways. Such products should, of course, have the all-around type of label—but if the packer has not been that foresighted, the dealer should not select such products for long-exposure in window displays. Such merchandise should be placed where it is most remote from sunlight and actinic or ultraviolet rays. In time, manufacturers may provide dummy glass packages with permanent display contents for window use. In the meantime, however, certain products must be kept out of prolonged sunshine areas.

6. Window displays. Food retailers find that handsomely colored foods in glass containers mixed into bright combination in mass displays will sell quickly, that women who never bought certain foods in other containers will respond to them in glass. Color of products in glass provides opportunity for many color schemes in glass display with realistic appetite appeal. The effect of color in promoting sales has been proved hundreds of times and with the factor that the food ready for eating makes up the color, opportunities for merchandising are multiplied. Clerks in this chain as well as in others are being trained to match and contrast colors and tones harmoniously along shelves.

7. Packing glass for delivery to customers. Most grocers use empty cartons in which to drop off an order at the customer's house. Every attempt is made now to pack glass containers more carefully for this delivery service. The western chain insists that no carton in which glass packed

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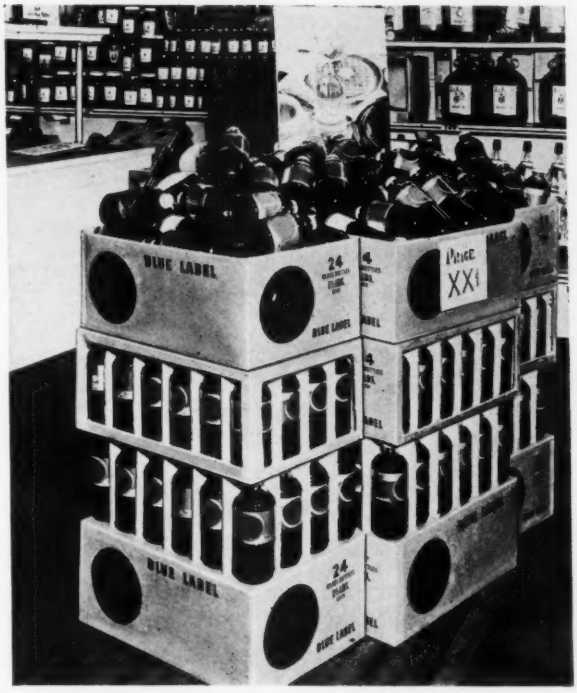

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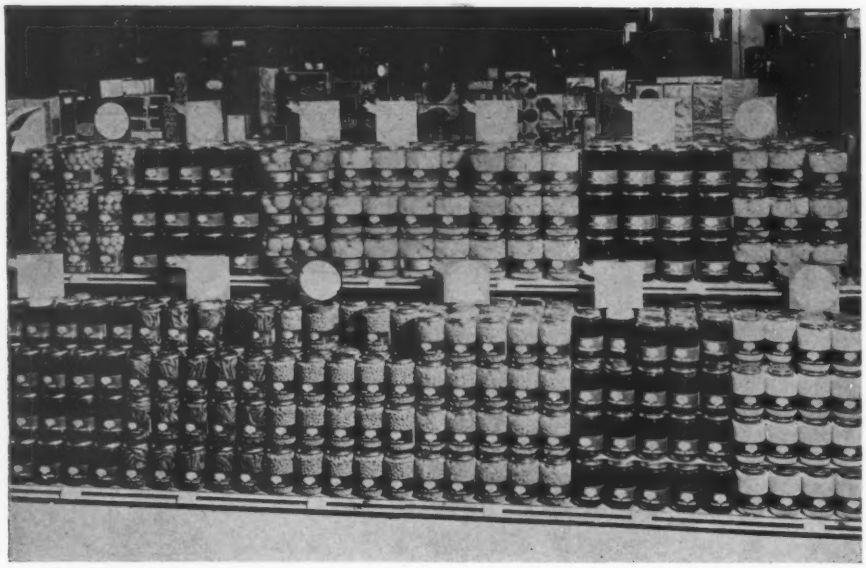
3. Spotlight group for store aisle is built on a base of empty cases. Bottles are stacked on top of these, using partition dividers. Bottles jumbled in top cases make the display higher in the center. 4. Taxi basket treatment has empty cartons on top with full cases on bottom.



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5. This mass display of glassed foods is arranged on a table which has a shelf. Vegetables are stacked four tiers high on the first shelf and three or four on the second, and are alternated for the best color arrangement.

foods is received from the manufacturer shall go out again containing other merchandise. They reserve these partitioned cartons for protecting the 6 to 10 glass jars which a customer may buy. When partitioned cartons are not available, each carton must be padded with newspapers rolled thick and a supply is bought for the purpose.

Dealers have learned that by what they call "rotating" sales, older merchandise can be sold faster by constantly moving it to the front of the shelving while new is inserted behind. Rapid turnover thus aids in eliminating possible damage to glass-packed goods. Dealers also have learned that it is impractical to attempt to place the same number of glass jars on a shelf as tins of the past because of the heavier weight of the glass.

The western food chain spent two months training its personnel to observe the above facts. Employees "finished" by learning to open screw caps and other closures easily without the rapping or pounding, which will break the top ridge of the jar, and to pass along this information intelligently to customers. They learn to advise that glass jars be opened only on a flat, rough surface if possible to prevent the jar from spinning away and crashing to the floor. Use of can openers, general leverage or light tapping on threads to start closures was "preached" over and over, demonstrated until every salesclerk could open any package without damaging it.

In its effort to assist retailers to make the most of the sight-selling advantages of glass packaging one of the large suppliers of these containers has issued a series of 10 ways to build glass displays. Below are descriptions of some displays:

Several of them are made by using in accordance with instruction the partitioned cases in which the glass packages are shipped to the retailer. For example, a vegetable display is made by placing four full cartons right-side up on the floor as a base. Jars are stacked on top of the four-case base between the partitions removed from the cases. Four full cases are then stacked on top of the stacked jars. Visibility is provided by simply cutting the front panel from the front of the two cases facing traffic. On top of these are more cases—two of them cut diagonally to provide a tumble bin just above counter level. Many variations may be achieved by this type of stacking and the use of partitioned cartons.

The booklet describing these methods of displaying glass packages contains exact instructions about how to prepare each of the various types, as the photographs show.

Cylinder displays of glass-packed merchandise are recommended as effective and sturdy. A simple way to make one of these is to use several full cases as a base. The glass packages are then placed in a circle on top of these cases. A cardboard disk cut the same size as the circle of jars is placed on top of the first circular layer of jars. More jars are placed in a circle on top of this disk. This stacking is continued—first jars, then cardboard disk—until the cylinder is as high as desired for the display.

Quart jars may be arranged effectively by placing one full case on the floor. Five more full cases are then cut open diagonally from top to just near enough to the bottom to allow for a protective edge so the containers cannot slide out. The top cut portion of the carton is then removed. The cases are then placed one on top of the other above the full case base. The case partitions are left for protection in all but the top case.

These seven hints for making glass displays are added to the advice in the booklet:

1. Protect the base of your displays so that the jars on the bottom are not soiled. Either put full cases on the floor or have a wooden base on which to place the glassed foods.
2. Do not build your displays too high or too low. A height of about 52 inches is best.
3. Price card your display prominently, but be careful that the price card is not in front of the goods where it will stop people from buying.
4. All displays should have a starting gap. Customers hesitate to buy from a display that is symmetrically perfect. It says, "Don't touch me."
5. Put displays in good locations as displays are primarily intended to increase volume. A display in a bad location will defeat its purpose.
6. Do not build skimpy looking displays. When small quantities of goods are displayed, it is better to put them on a table or dummy the base so that it appears full.
7. Keep your displays open. Do not block them with other goods or place them in hard-to-get-to places.

Credit: Photos, courtesy of Owens-Illinois Glass Co.

"Time and again these days, I see alert, carefully-controlled machine maintenance paying off in uninterrupted, faster production and longer life," says "Speed" Production. "Clean, properly lubricated, well-kept-up machinery is efficient machinery. Operators take pride in it, and your production lines hum. Needless stops for repairs and adjustments are eliminated. Yes, sir, the efficiency and life of your machinery rest right in your hands—and here are a few common-sense pointers on how to handle your bottling machines:

1. "If possible, assign one person to be responsible for the proper cleaning and lubrication of all your bottling machinery.

2. "Appoint one person to be responsible for the supplies of lubricants; particularly, special vacuum pump oils, heavy grease for gears, lighter grease for transmissions. — When stocks run out there is always a dangerous tendency to use 'any old grease or oil' for the time being, and that should never be done.

3. "Set designated times, at the proper intervals, to service the different parts of the various machines. For a *thorough* lubrication job, the machine should be shut down.

4. "On machines handling glue, don't let glue cake up to any extent. You can chip most of it off with chisel and mallet, then soak off what remains with water and a rag.

5. "If breakage of a bottle occurs, clean machinery promptly to prevent grease being diluted by contents and to make sure that contents or glass particles do not get into bearings.

6. "Operators should be trained to report immediately any squeaks or noises that are out of the ordinary. Your machine maintenance program depends on the cooperation of the operators as well as on the person you assign to be responsible for machine lubrication.

7. "Motors should be lubricated only by someone who thoroughly understands them — preferably by the plant electrician.

8. "Your machine builder or lubricant supplier will be glad to give you complete information on specified oils and greases to prolong the life and boost the efficiency of your machines."

PNEUMATIC SCALE CORPORATION, LTD.
71 Newport Avenue, North Quincy, Mass.
NEW YORK • CHICAGO • SAN FRANCISCO • LOS ANGELES

★ PNEUMATIC
SCALE CORPORATION, LTD.
PACKAGING & BOTTLING EQUIPMENT

★ ★ ★

If you have an IDLE WRAPPING MACHINE

we'll find good use for it!

America needs the production of every machine as well as of every man.

We would like to feel that all of the wrapping machines we have in the field are working most effectively—for the armed forces or on the civilian front . . . So during the past few months we have been locating idle machines of our make for those who need them. We do not buy nor sell these machines. We merely place the prospective user in touch with some other manufacturer who has a machine which he is willing to sell or lease.

This service has proved extremely helpful, not merely to those producing essential civilian goods, but to numerous concerns who have rush orders for the armed forces.

So if you have a machine of our make that you could release, why not list it with us? Just send us information as to its type; also our factory number.

PACKAGE MACHINERY COMPANY
Springfield, Massachusetts

NEW YORK CHICAGO CLEVELAND LOS ANGELES TORONTO

PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

After repairs, this belt carried 3,808,000 tons, saved 7,900 lbs. of rubber.

How to save rubber belting

The United States has been cut off from the world's largest rubber-growing areas for a year. New rubber products can be purchased only on the highest priorities. Until large-scale production of synthetic rubber is a reality, the importance of rubber conservation is the concern of every industry in the nation.

There are two important ways to save rubber: (1) by proper care of existing rubber equipment and (2) by proper repairs. For the past ten years manufacturers of rubber products have devoted ever-increasing attention to ways and means of lengthening the life of rubber equipment. Now every one of these leading manufacturers has made available to its customers the facts they have found about the care and repair of rubber.

The plant operator who studies this literature carefully and puts it into practice not only can add longer life to rubber equipment in his plant but can save his company time and money.

The average packaging plant uses many feet of industrial belting for conveyors and power drives. Some of those belts are getting old. The first decision might be to discard them, but don't until you have tried every possibility to save them.

The man in the above picture is preparing an injured conveyor belt for vulcanized repairs. One such 48-in. conveyor belt, 940 ft. long, was condemned for scrap. For two years and nine months it hauled 7,000,000 tons, then failed. An alert maintenance man, however, decided it could be saved. Since vulcanized repairs, it has carried 3,808,000 tons. More than 7,900 lbs. of rubber headed for the junk pile were saved and put back to work. The belt owner, it is said, saved more than $3,400.

Oftentimes, old or discarded larger belts can be cut down and made into smaller belts that priorities won't allow to be purchased. For example, an Ohio paper mill needed badly a 20-in., 6-ply endless belt, 42 ft. long. They had on hand a 32-in., 8-ply belt, 56 ft. long, which had seen several years' service on a drive no longer used. The top and bottom plies were worn and cracked. These were stripped off. The belt was split into 20-in. and 12-in. widths. The 20-in. width was spliced by a special method into the 42-ft. endless belt and the remaining width was slit to provide 112 ft. of 6-in., 6-ply belting to be used on smaller drives. Cost to the mill for the repair was $36.10. Cost of the new belting would have been $279. Eighty pounds of crude rubber was saved, enough to make 200 gas masks.

First essential in the preservation of rubber equipment and

products is a knowledge of the facts of rubber life. Briefly these are as follows:

1. Exposure to sunlight deteriorates natural rubber rapidly and is a frequent cause of breakdowns. Therefore, it is important that all rubber products—hose, belts, tires, clothing—be protected from the sun's rays whenever possible.

2.—Oil, gasoline, grease and other products with a petroleum or vegetable oil content are most harmful to rubber. These materials destroy rubber by eating into it, by rotting it, by causing it to swell and lose its elasticity. Wherever it may be avoided, oils and greases should not be permitted to come in contact with rubber. If it does happen, the rubber should be cleaned and washed as quickly as possible. There are special solutions for this purpose, but even soap and water are useful.

3. Abrasion destroys rubber as it does everything else. In many instances it is possible to cut down frictional wear by checking all equipment over which rubber travels or which it touches, and making needed adjustments. Crooked running of a belt, for example, can cause undue wear.

4. Heavy overloads on tires, conveyor belts, transmission belts and other products cause strains that break down rubber and fabric and shorten their life. This condition can be avoided by strict observance of loading rules and closely adhering to operating regulations provided with the equipment, or easily obtainable from the supplier of the equipment.

5. Excessive heat or cold also destroys important properties of rubber, especially when a rubber product is subjected to severe heat (exceeding 150° F.).

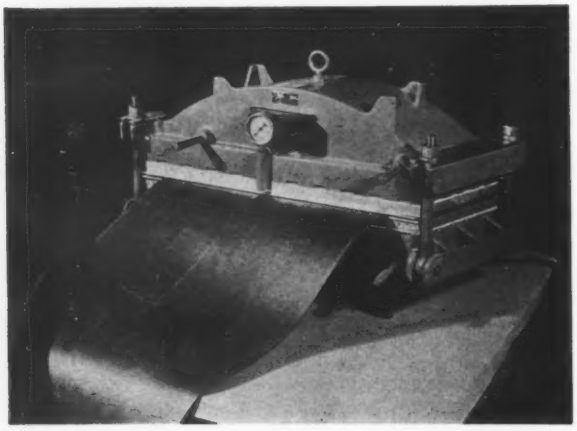
6. Constant bending and flexing tend to shorten the life of many industrial rubber products, especially those not specifically designed for such service.

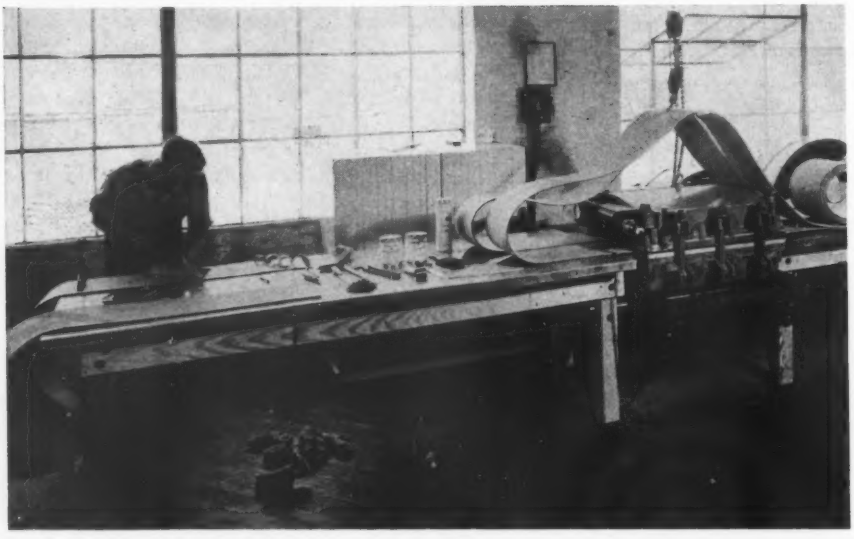
7. Capacity to stretch and return to its original shape is the most valuable property of rubber. It must be remembered that a rubber article which is kept under constant tension is much more susceptible to deterioration than the same rubber article at rest. For example, a hose if closed at the end and constantly full of water or air at high pressure will have only a fraction of the life of a similar piece of hose that is used intermittently.

8. Rubber is not completely waterproof—contrary to common belief. Hose and belting constantly drenched with water gradually absorb some of it. The moisture penetrates to the cotton reinforcement and sometimes mildew and rotting can destroy the structure.

These essential facts about the care of rubber can be applied specifically to the care of industrial belting. First, conveyors and other industrial rubber belting should always be protected from direct sunlight. This is particularly true in cases where such equipment may be used out of doors. Standard belting usually withstands temperatures up to 150° F. However, belt life will be shortened to some degree in closed housings in excessive temperatures or in warm weather without proper ventilation. For excessive temperatures, belts of special heat-resisting compounds should be used. Cold in itself is harmless to rubber, but in operations where ice is used or where ice may form, the sharp edges of the ice may do harm to the rubber cushioning.

Industrial rubber belting is comprised of two component parts—cotton fabric and rubber. The fabric supplies all the structural strength and does all the work of supporting and pulling the load. The rubber with which the cotton is covered supplies the protection and, impregnated, is 100 times more resistant to all the damaging conditions than the cotton. The two materials in combination—one supplying strength, the other protection—have made possible the modern belt conveyor. Rubber belting, therefore, should be protected from excessive moisture, because contrary to common belief rubber absorbs some moisture. Moisture penetration to the fabric can cause shrinking and encourage mildew growth





Above, left. Repairs may be made with a portable vulcanizer in your own plant. Left. The average packaging plant uses many feet of industrial belting. Many feet can be saved by proper care and repair, or by cutting larger belts into narrower widths for use on smaller power drives.

Various steps in the preparation of rubber for vulcanized repair. 1. *Close-up of typical conveyor belt injury.* *First step is stripping off rubber cover.* 2. *First ply is pulled off along carefully marked off chalk lines.* 3. *All plies removed, ready to be trimmed and buffed.* 4. *First coat of rubber cement applied after buffing.* 5. *Filling in with fabric.* 6. *Third ply is filled in.* 7. *Top ply is trimmed after all steps are in place.* 8. *Portable vulcanizer completes repair right on the owner's premises.*

which may be deleterious to the fabric. Certain types of belting to be used under moist conditions are given anti-mildew treatment. However, even such specially treated belting should be given regular inspection and repair.

Oil is the greatest enemy of any rubber product. It causes swelling and gradual rotting of rubber. Mineral oils are especially penetrating and can eventually work deep into the body of a rubber belt. When one edge is exposed to oil, for instance, the belt elongates on that side and becomes crooked. Maintenance men should be constantly on guard to see that no oil drips on the belts from pulleys, idlers or other sources. There are many ingenious methods for preventing oil leakage that can be adapted to any operation by the shop mechanic and can frequently be made from metal scrap around the shop.

Rubber can stand up indefinitely against abrasive wear and even impact of sharp material as long as the force involved does not distort the rubber beyond its elastic limit. A common rubber band will stand stretching to two or three times its length for years, but if you pull it to its elastic limit and keep on pulling, it will soon go to pieces. The same thing can happen when you compress the rubber cushion cover of a belt beyond its capacity to yield. The surface is cut or broken and the protective cushion torn away, leaving the cotton exposed to damage. Such injuries can be avoided by adjusting belts at proper tension, by proper arrangement at loading points, by proper arrangement of idlers, by keeping skirtboards from touching the belts, by making sure the belt run is straight, by preventing pieces of conveyed material from catching between belt and pulleys.

Belts should be kept clean. The safest method recommended to remove ordinary dirt is to wash with soap or trisodium-phosphate and rinse well. Dry-cleaning fluids may be necessary in some cases to (*Continued on page 142*)

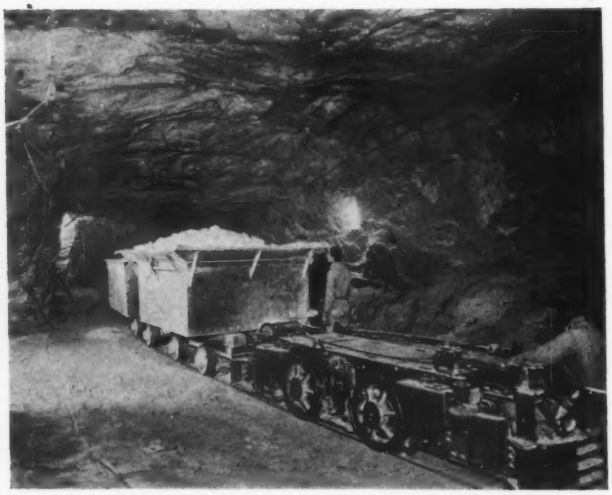
Salt lines begin 1,000 feet under

by Robert A. Latimer

Jefferson Island Salt Co. of Louisville, Ky., packages three types of salt at its huge mines and packaging plants at Jefferson Island, La. Since 1921, when the company sank the world's largest reinforced mine shaft, 100 feet in diameter, into one of five vast salt domes in this marshy Louisiana area, the development of 100 per cent automatic machinery for removal of the salt 1,000 feet below sea level and for packaging rock salt, evaporated salt and grainer salt has been in process. Today, every packaging operation from the bagging of rough rock salt for industrial purposes to the production of the octagonal Jefferson Island red, blue and white package, familiar to American housewives, is entirely automatic, made possible by the use of flexible lines, especially developed cartoning, gluing and sealing machines in the packaging plant located just above the mine shaft.

A substantial percentage of the salt on the nation's dinner tables as well as industrial, livestock and processing consumption, comes from this largest of the five Islands of Louisiana, geologic formations occurring, so it is said, no where else in the world. There are five giant "domes" of pure salt of which Jefferson Island is the largest. The salt domes, according to geologists, were formed in the Permian Age, when river-deposited beds of salt were covered with lime, silt, gumbo, etc., to the depth of five miles. Pressure generated upon the granular sodium chloride resulted in a gradual flow upward toward the earth's surface, salt under pressure running like hot tar, and forced into mushroom-shaped blossoms of pure rock salt with a stem extending into the earth five miles or more. That at Jefferson Island rose to within 100 feet of the surface and, being northernmost from the sea, contains the purest rock salt. The Jefferson Island mine has been sunk to a depth of

1. Interior of salt mine, much of which is 1,000 feet below sea level. 2. Crude salt is removed by these electric shovels, after the face of the salt has been blasted away by dynamite charges. Single blasts loosen an average of 500 tons of salt. 3. An electric locomotive picks up the mine cars and pulls them direct to bottom of the mine shaft.



1,000 feet, since purity increases with depth in formations of this type. To penetrate the shifting quicksand and Pleistocene layers intervening between surface and salt, a concrete-lined, steel-rail shored shaft required 100 carloads of sand, gravel and cement. Through this shaft rock salt in lumps anywhere from 100 pounds to two tons are transported from gigantic mine caverns to the processing and packaging buildings. All buildings burned to the ground in 1940 and have been entirely rebuilt with redesigned packaging and production facilities.

Jefferson Island Salt is mined by first undercutting the pure-white salt face of the mine with an electric chain tooth undercutter, digging a slot. Cuttings are removed to leave a clear space for the salt to fall when blasted. This short fall aids in breaking it up into small lumps for easier handling. After the cut is completed a scaffolding goes up and the salt is blasted loose. The face of the salt is drilled with electric drills, leaving holes 18 inches apart by 7 feet deep, into which sticks of dynamite are inserted and tamped tight with fine salt from the floor. When the blast is set off, the lower charges explode first and the top line last—the explosion progressing from the bottom up. This also is done to drive the salt down and break it into small lumps. One blast averages around 500 tons of salt.

The crude salt is removed from this pile by ¾ cubic yard electric shovels. If the tunnels are to be left as "low roofs," the operation is continued as described above. However, most of the salt is mined to "high roof," in which case the drilling and blasting are continued by a process resembling the cutting of inverted giant steps approximately 20 feet long and 10 feet high. When salt falls to the mine floor, it forms an enormous pile filling the blasted steps to within about 20 feet of the roof. Advantage is taken of this natural platform to continue operations until 80 vertical feet of rock salt has been blasted and dropped onto the broken pile below. As this is completed, the salt is loaded into cars by electric shovels. In this way, the stock piles move along the galleries, new salt in front replacing that removed by shovels at the rear. Mine cars are picked up by an electric locomotive and pulled to the bottom of the shaft where they are dumped into a large bin above the crusher.

This consists of 18 hammers spinning on a common shaft, which strike salt lumps weighing as much as a ton, and reduce them to no size in an instant. This first step in packaging is carried on underground. Next, the salt falls into another large underground bin from which it is unloaded by endless conveyor belts carrying large scoops into the cars (ships) which carry it from 1,000 feet below sea level to 7 stories above ground in the processing mill, where smaller conveyor belts unload it into a smaller forward stock bin.

From these small bins the salt is fed evenly over a series of 5 electrically vibrated screens. These agitated screens separate the salt according to size into several grades from large "capping salt" of walnut size to fine flour salt which resembles wheat flour. As each size is separated, it flows by gravity down circular shafts to individual bins for storage until needed. The larger grades of salt, which go to chemical plants and in-

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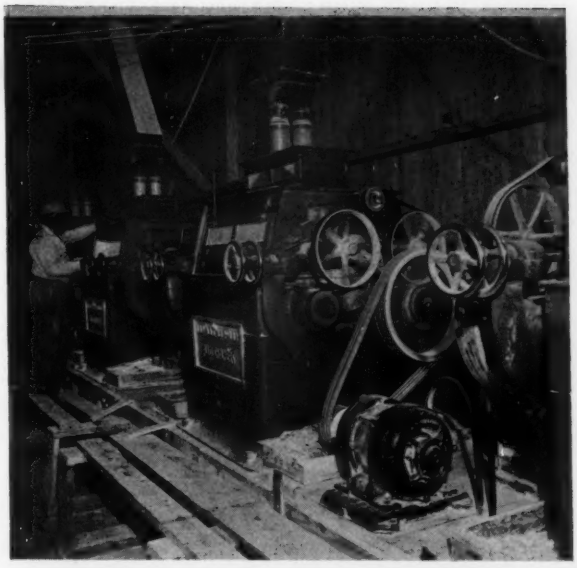

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4. First step in packaging is the grinder, which reduces the large salt lumps to very small particles. 5. Rock salt is bagged directly from the storage bin, ready to be sold to customers. This machine automatically weighs, fills and closes the bags. 6. An aisle display of the hexagon-shaped consumer package of Jefferson Island table salt. These cartons have been patented by the company and lithographing is done directly on the cartons themselves.

7. *The packaging plant for the salt mine is incorporated in the mine itself. Packaging of some of the salt begins below ground in the shafts.*

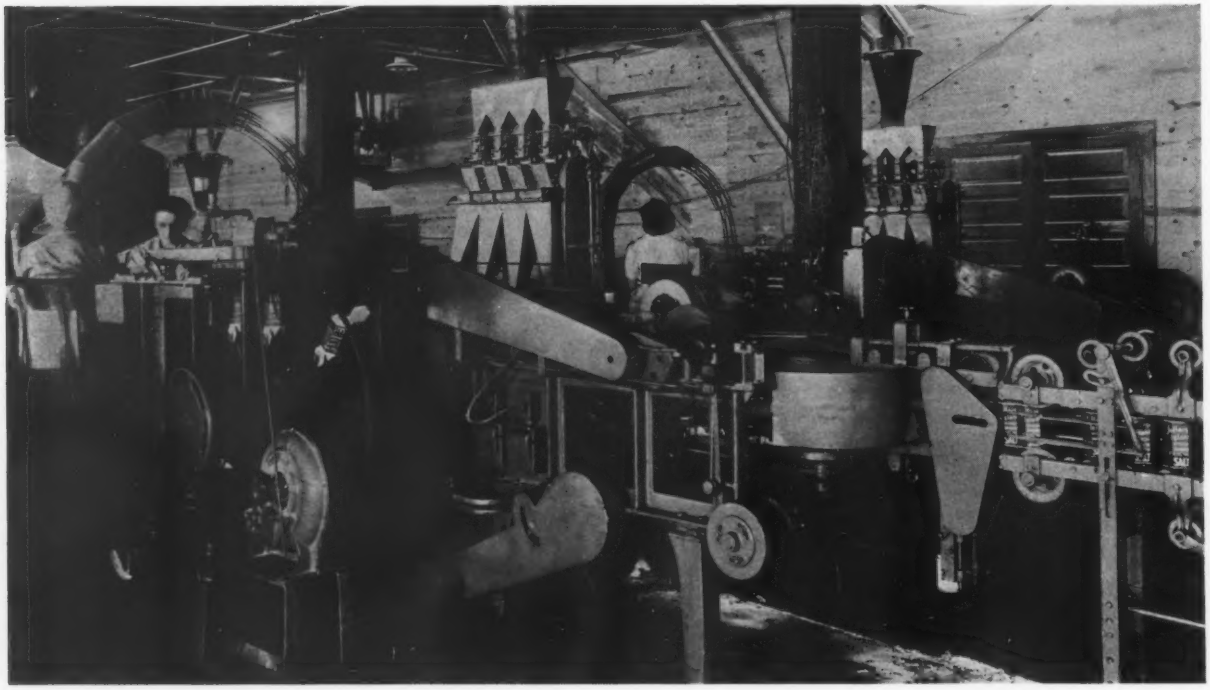
dustry in general, are bagged directly from these bins through automatic scales, bag fillers and bag closing machines, or directly into freight cars by means of a 20-in. conveyor belt which runs along under the row of bins and empties directly into a movable car-loading chute. The belt will load two tons a minute into freight cars.

To increase flexibility of packaging and to make it possible to provide any size of salt in any quantity, secondary grinding mills are installed in the packaging rooms connected directly to the storage bins. These will take any of the larger sizes and grind to any specified desired size. From the mills, it is conveyed by elevator to the top of the building and resized by another complete set of screens before being returned to storage bins. From these bins the salt for table use is taken to the mixing bins where ingredients are added which make the salt free-running in damp weather. Iodine for goitre prevention is also added here. From the mixing room the salt goes to small bins which feed the packaging machines.

There are two packaging lines which can be used either for a lithographed package for retail sales or a plain package which is later tight-wrapped by a tight-wrapping machine. These machines are 100 per cent automatic. Girl operators on the lines need only take flat cartons from the cases standing at the head of the line and stack them neatly on the receiving shelf on the machine. The machine lifts each from the shelf, opens it, glues one end tightly, fills the package with salt from a gravity shaft and revolving agitator, glues the other end and dries the glue before delivering the package sealed, either to the tight-wrapping machine where salt is to be separately labeled or to the packer directly, when the package is the lithographed carton.

The packer fills the shipping cases with cartons and allows

8. *Packaging line for table salt. This is an automatic line with the machine doing everything. Operators merely place flat cartons on receiving shelf of machine, which opens, glues one end, fills carton with salt and then seals it closed.*



them to slide on to a belt which conveys the filled cases to an automatic case sealing machine. This seals the top and bottom of the cases and delivers them via a roller conveyor to the storage room one floor below. In no operation is it necessary for the salt to be touched by human hands. Operators are required only for inspection, package and case stacking.

Evaporated vacuum pan salt which is distributed by Jefferson Island Salt Co. to 38 states and several foreign countries, in the hexagonal package which makes for easy recognition and handling, is next in line. It is made by dissolving rock salt in pure water for brine, which is then further purified by chemical treatment and filtration before being boiled down to salt again in large enclosed steam kettles under vacuum. These kettles are called vacuum pans or evaporators and were designed by the company. They are 12 feet wide inside diameter and contain over 1,000 tubes 5 feet long through which the brine circulates while steam on the outside makes a vigorous boil. Steam is taken off at the top of the pan and the pure salt is drained off as "slurry" at the bottom of the pan. By means of the vacuum maintained on the evaporators with an air pump and condenser, the steam from the first evaporator is used to boil the second evaporator. Salt from the bottoms is passed over a rotary vacuum filter which draws air at 360 degrees through the salt. Dehydration thus removes the last trace of moisture. From there, the treatment is very similar to the rock table salt previously described. Ingredients for goitre preventions and easy pouring under damp conditions are added in the mixing room before the evaporated salt moves to the two hexagon carton packaging lines.

These machines were a mutual development of the machinery manufacturer and the Jefferson Island Salt Co. and required two years to perfect. The patented hexagon package which is widely associated with the company here is likewise opened up, filled with salt, sealed and passed along to an automatic cartoning machine and case sealer. The lithographed packages are fed continuously from a shelf at the head of the line. Two girls feed the machines which run to the speed of 60 packages per minute per machine. Cases as sealed flow by gravity conveyor to the shipping room or storage room depending upon the need. Use of the pre-lithographed package eliminates the need for labeling and sealing on the line. Largest retail production is over these two lines, which have cut some 55 per cent from the old packaging time since 1925.

A third variety of salt produce is grainer salt—something which few consumers see. However, (*Continued on page 142*)

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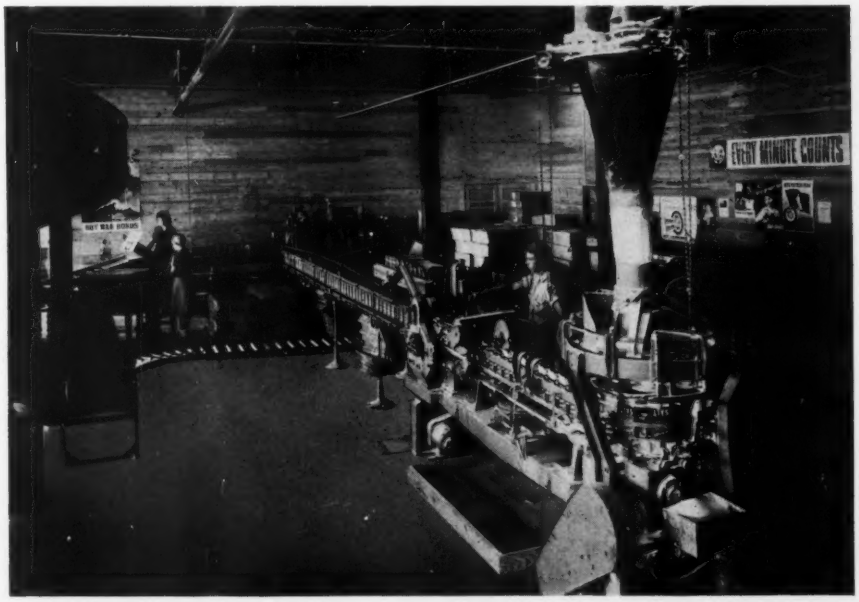

9. *Here the small consumer packages of salt are being filled and passed on by conveyor belts to the operators who fill the cases, which are then automatically sealed.*

10

10. *These operators at the end of the cartoning line, fill the shipping cases with the packages and place the cases on a conveyor, which takes them to a sealing machine. This machine seals the top and bottom and delivers the cases to the storage room via a gravity roller conveyor.*

BRITISH OFFICIAL PHOTO

Men from the Scottish Command landing on the beach from landing craft.

High-speed sealing for weatherproof cases

*by G. B. Cloran and Dr. F. C. Campins**

Last month Modern Packaging published an article on Weatherproof Cases. The following discussion by two leaders in the field offers a solution for some of the difficulties mentioned in our previous issue. If you are a large packer of products for overseas shipment, information on these pages may be the answer to your problems.

It is just before dawn. A power-driven landing barge approaches shore. Steel-helmeted men are crouched behind its protective walls . . . ready to spring into action the moment they are beached.

A dull scraping noise and then a sudden, jolting stop. The snub-nosed prow drops forward and brave men pour out to their appointed stations—some to ferret out machine gun nests—others to deal with shore batteries. A few stay behind and feverishly toss supply cases overside into shallow water from where they can be retrieved later. Seconds count, for the beach is narrow and they must make way for the next group of barges which can already be seen approaching through the early morning haze. Every move has been rehearsed for months and must be carried out with clock-work precision. A jammed revolver or a poorly sealed case of ammunition or canned food might spell delay, confusion, defeat and death!

Little wonder, then, why marginal "weatherproof" cases and any old sealing glue are not good enough for our overseas shipments. Consider the role of a case of canned goods in this invasion attempt. Soldiers fight on their stomachs so that when you land troops, you must also land food. But under what conditions? It might be noon the next day or later before hands can be spared to get those supplies which have been pounded by the surf for more than 30 hours. Then they are stacked on the beach above the high water mark, but it rains almost every day in the tropics. The temperature hovers around 110° F. and the humidity is drenching.

That is rough treatment for any shipping container, but we expect our boys to take it, why not our packaging? We have a job to do at home . . . a better job than we have been doing! Complaints have reached us from England, Australia, the Solomons and other theaters of war. Fibre cases will have to be made stronger and more waterproof and equally efficient glues to seal them will have to be developed, especially since wire-strapping may be eliminated to save steel.

Responsible adhesive manufacturers have done much but said little. They are aware that the lives of our men may depend upon how well and how quickly the sealing problem is solved, but are loathe to make claims willy-nilly which cannot be backed by performance. This conservative policy has led some to conclude that the leaders of our industry have

* National Adhesives Division, National Starch Products, Inc.

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One part of our job—and a mighty important part—is the work we are doing for Uncle Sam. We've been assigned war contracts that call for skilled production, fast production—production that will help bring victory to our country.

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been lax, but the facts belie that rumor and the purpose of this article is to present the facts.

There is no adhesive panacea on the market and, as things now stand, there can be none. Like Hydra, the many-headed monster, there is a complex problem with a faculty for developing two new complications to replace each phase conquered, so that the struggle continues with science at last getting the upper hand.

To understand the progress, it is necessary to state the problem first. Briefly, it is this—to develop

Adhesives (plural):

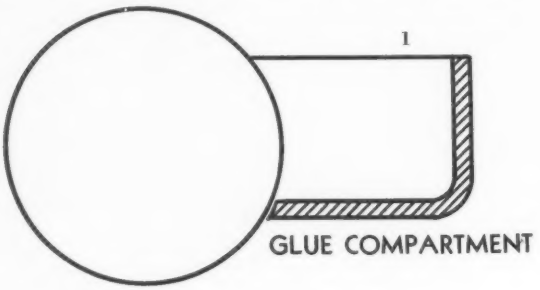
1. from available raw materials;
2. suitable for permanent sealing (without the aid of steel strapping);
3. applicable for hand or machine methods;
4. adaptable to weatherproof solid fibre or any type of impregnated, coated, lined or otherwise treated board which meets certain defined performance requirements;
5. that will provide a fibre-tearing bond after as many as seven days' immersion in salt and fresh water at 72° F. (allowing 48 hours' drying time before testing);
6. to withstand a humidity range of 0 deg. to 90 R. H;
7. to withstand a temperature range of 20 deg. to more than 130° F;
8. to pass appropriate drum tests.

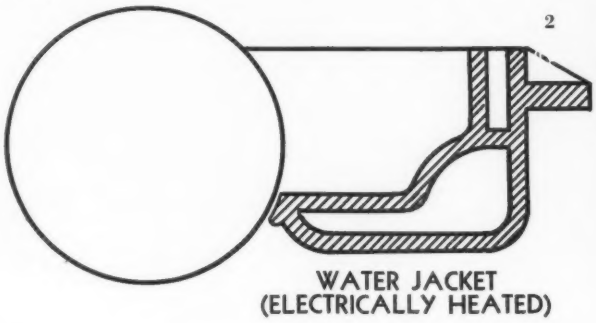
At some point in our research work, we have met all these requirements, utilized practically every known adhesive base and tested today's "weatherproof" as well as some of tomorrow's "waterproof" stocks *but. . .*

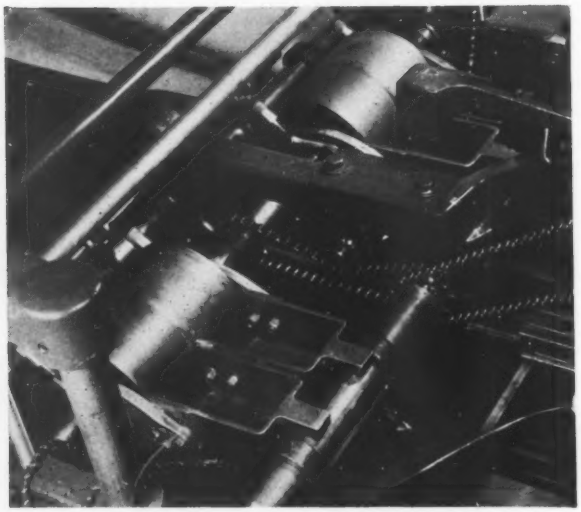
(a) a number of the most waterproof adhesive bases were recently placed on allocation and, as the result, many grades can no longer be considered available;
(b) of the remaining grades, the most foolproof are generally the slowest to set and this prevents their normal handling in high-speed automatic sealing machines;
(c) as yet, no standardization has taken place in the manufacture of the newer forms of waterproof fibre containers which would permit the publication of specific adhesive recommendations.

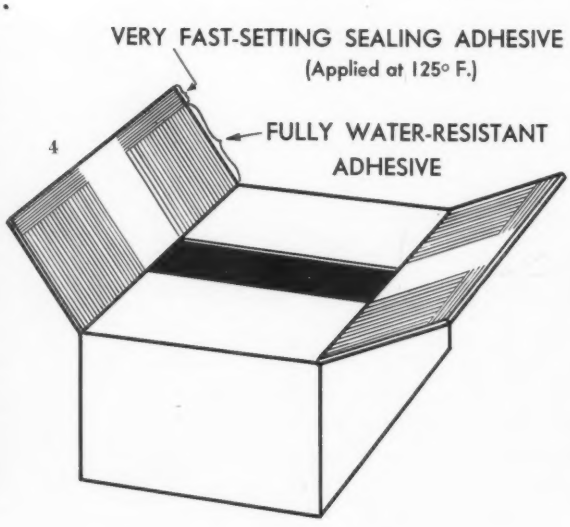
These are some of the new "heads" that have grown in place of the old. Thanks to splendid cooperation from government agencies and allied industries, stop-gap recommendations can now be made which are practical and provide vastly improved water-resistance over sealing glues which comply with current U. S. Army and Federal Surplus Commodity Specifications. At this writing certain recommendations may compromise with the compression-time factor, or involve slight mechanical adjustments in automatic sealing machines and compression units (*Continued on page 150*)

1. Diagram of standard cold glue pot for case sealing machines. 2. Jacketed glue pot for maintaining above room temperatures to speed setting of slower adhesives. 3. Photo shows specially-divided glue pot, whereby two different glues (one to hold the flaps down quickly and the other to give waterproof bond) may be applied to each flap. 4. Drawing shows how two types of glues are applied automatically.









FAITH

in the future

NO obstacles face us that are not small in comparison to those overcome by the brave men and women who pioneered this nation . . . and built it with their faith in the future. You must make your own future. Today, our high speed metal lithographed presses work day and night producing needed metal packages . . . if you produce anything necessary in the interests of defense . . . we can serve you quickly and efficiently. In your plans for the future, we may help you. In the meantime—Look Ahead.

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LITHOGRAPHED WITH HARMONIZED COLORS

Internal tearing resistance of paper

*Revision of TAPPI Standard Method T 414 m–40**

Scope

This method is adapted for determining the average force in grams required to tear a single sheet of paper after the tear has been started. Results obtained by this test have in the past been designated simply as tearing resistance. They are more properly, however, a measure of the internal tearing resistance, as distinguished from the initial or edge tearing resistance.

Apparatus

The testing apparatus shall have: (1) a stationary clamp and a movable clamp carried on a pendulum, preferably formed by a sector of a wheel or circle, free to swing on a ball bearing or other substantially frictionless bearing; (2) means for holding the pendulum in a raised position and means for instantaneously releasing it; (3) means for registering the maximum arc through which the pendulum swings when so released. The pendulum shall carry a circumferential scale, graduated from 0 to 100 so as to read against the pointer the work done in gram-centimeters by the pendulum when tearing a specimen of paper, divided by 137.6 ($^1/_{16}$ of the force in grams required to tear the specimen). (*See* Note 1.)

With the pendulum in its initial position ready for a test, the two clamps shall be separated by an interval of 2.5 mm. (0.10 in.) and so aligned that the specimen clamped in them lies in a plane perpendicular to the plane of oscillation of the pendulum, with the edges of the jaws gripping the paper in a horizontal line, a perpendicular to which through the axis of suspension of the pendulum is 104 mm. (4 in.) long and makes an angle of 27.5 deg. with the plane of the paper.

The clamping surface in each jaw shall be over 25 mm. (1 in.) wide and over 12 mm. ($^1/_2$ in.) deep.

Adjustment

For apparatus having a sector as a pendulum, and which tears the specimen as it moves towards the right, draw a pencil line on the base or stop mechanism 1 in. to the right of the edge of the sector stop. With the sector raised to its initial position and the pointer set against its stop, on releasing the sector and holding the stop down, the sector should make at least 20 complete oscillations before the edge of the sector which engages with the stop no longer passes to the left of the pencil lines. Otherwise the bearing should be both oiled and adjusted.

Level the instrument so that, with the sector free, the line on the sector indicating the vertical from the point of suspension coincides with a corresponding point on the base of the instrument, usually placed on the stop mechanism. After leveling, operate the instrument several times with nothing in the jaws, the movable jaw being closed, to ascertain if the pointer registers zero with no load. If zero is not registered, the pointer stop should be suitably adjusted until the zero reading is obtained. If it is necessary to move the pointer stop, the pointer friction should be checked as follows: Set the pointer at the zero reading on the scale before releasing the sector and after release see that the pointer is not pushed more than 3 scale divisions beyond the zero. A reading of more than 3 divisions indicates excessive pointer friction and the pointer should be removed, the bearing wiped clean and a trace of oil or petroleum jelly applied. When the pointer friction has been reduced, finally adjust the pointer stop.

Calibration

The calibration shall be performed substantially as follows: Level and adjust the instrument on a level sheet of plate glass and clamp a known weight, W grams, to the radial edge of the sector beneath the jaws. The center of gravity of the weight (including means of attaching) is previously marked by a punched dot on the face of the weight which is to be in the front of the instrument.

Raise and set the sector as for proceeding with a tearing test and, by means of a surface gage or other convenient means, measure the height in cm. (H) of the center of gravity of the weight above the glass plate. Then release the sector, allow it to swing and note the pointer reading. Without touching the pointer, raise the sector until the edge of the pointer just meets with its stop, in which position again determine the height in cm. (h) of the center of gravity of the weight above the glass plate.

The work done = $W\ (h-H)$ gram-centimeters. The pointer reading for the standard instrument and method specified should be:

$$\frac{W\ (h-H)}{137.6}$$

Five weights from 75 to 400 grams form a suitable range for the calibration, one or more being clamped on the edge of the sector in different positions, the work done in raising each being calculated and added together.

A record shall be made of deviations of the indicated readings and corresponding corrections made in the test results.

It is unnecessary to repeat the calibration of the instrument provided it is kept in adjustment and no parts become changed or worn, but the tearing distance, which equals 43 mm. (1.69 in.), shall be checked prior to each series of tests and adjusted if necessary.

Test specimen

Specimens for the test shall be cut accurately in each principal direction of the paper about 76 mm. (3 in.) long by exactly 63 mm. (2.5 in.) wide with the slit to be cut 20 mm. long, leaving exactly 43 mm. (1.69 in.) between the end of the slit and the edge of the specimen. Samples should be conditioned according to TAPPI Standard T 402 m before they are cut for the test. (*Continued on page 144*)

* Criticisms of this method are earnestly requested and should be sent to R. G. Macdonald, Secretary, Technical Association of the Pulp and Paper Industry, 122 East 42d Street, New York, N. Y.

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KEEP YOUR EAR TO THE GROUND

This is a new department. Many of these items may be just rumor.—Take 'em or leave 'em. Ordinarily, we'd rather be scooped than wrong. In these unusual times, however, too many things are happening in the laboratory to wait until every development is commercially available. Making a place for brief notes on what we hear will be a stimulating service to everyone. Some of the items are confidential—so please don't ask for particulars yet.

● **Rubber Substitute from Soybeans**—Secretary Claude Wickard (radio talk): "I visited the USDA Northern Regional Research Laboratory in Peoria recently and saw a new rubber substitute from soybean oil called Norepol. It doesn't have the stretch and strength of rubber but many uses are promising—insulation, rubber heels, rings for sealing jars. It is still a laboratory product, but the scientists are working to make it better. Important points are that it is comparatively simple to make and that it can be made from farm products such as corn, cottonseed, etc."

● **Time Changes Viewpoints**—Back in September (see MODERN PACKAGING, September 1942, page 49) brewers said reclaimed caps caused so much trouble they refused to use them. A product with their brand, they said, must measure up to certain standards. They would rather produce less than to send out their beer with an anonymous cap.

Now the story is different. Schaefer, for example, is announcing a request over the radio for the return of caps with returned bottles.

● **Gleam of Light for Crown Caps**—Look for a story soon about a new plastic crown cap adopted by a nationally known Middle Western brewer. This is a thermoplastic cap of the asphaltic or bitumen type. Molding material is compounded to avoid cold flow—a factor which sent previous attempts to the graveyard. This new molding material, it is claimed, can be produced for 5½¢ per pound, in refreshing contrast to the 30¢ or 40¢ per pound prices on some other compounds.

Reports indicate that this new cap has passed actual tests in the brewery with flying colors—and if we know anything about brewers they are tough testers. (We've seen another cap put through the pasteurizer—with unhappy results.) We are told that a completely converted automatic packaging production line, adapted to the use of this cap, will be ready soon.

Crown caps to the tune of 18,000,000,000 are used yearly for beer, carbonated beverages and soft drinks. No one producer can possibly supply this demand. Other attempts—we know at least five—are being made with varying degrees of success. Two have quit cold. In almost all cases, it has been possible to cap soft drinks and beer by hand—but that's different from maintaining production-line speed. Adaptation of capping machines involves making new parts and this has stopped more than one in its tracks. Raw material is another problem with two ugly heads. One is the cold flow factor mentioned above; another, the ever-present question of availability. Attempts have been made to use cellulose acetate, cellulose acetate butyrate and styrene. Injection molding capacity is still another problem facing these plastic cap developments. War needs are preempting more and more of this molding capacity and unless WPB authorizes new machines (unlikely when you remember Order M-154) there won't be any danger of over-production of these plastic crown.

Meanwhile we've had a prominent soft drink manufacturer on the telephone about another substitute crown cap. "We investigate everything that looks like a cap these days," he said. "This one received some pretty wide publicity which was very unfortunate. It held the pressure all right, but you must remember that this was a hand-capping operation. It comes as a flat disc, which must be formed under heat by a special chuck, and we're afraid it will require entirely new packaging machinery which simply can't be obtained these days. All this represents is hope."

● **Actually Available!**—Colemorite is a new thermosetting material, non-critical and suitable for closures which ought to be appearing soon on packages obtainable in the market. The price is about the same as that of urea and if urea gets tight this material will doubtless go to bat for it in considerable quantity. Its natural color is dull black, but it can be painted to obtain pleasing effects. Reports from plastic closure manufacturers who have tried it, indicate satisfaction.

● **Collapsible Tubes**—Dozens of tries are being made to find a substitute for the metal collapsible tube. So far, only one is on the market (see MODERN PACKAGING, November 1942, p. 31). Others are beginning to peak around the corner.

In the Middle West, a well-known molder of plastics was called in by a toothpaste manufacturer to figure on the shoulders for a collapsible tube which had a wall of coated paper and a two-part shoulder that clamped the side walls in place. The first attempt was to make an injection mold in one piece but this failed because of extremely thin side walls. Solution: Make a thin wall tube with a larger diameter and an injection molded shoulder, then weld the two together. This has been accomplished by extruding the wall tube of vinylidene chloride. The trick is to maintain uniform density and uniform wall thickness when extruding the material in continuous lengths. The molder does this by ingenious and accurate temperature controls.

The toothpaste manufacturer has completed tests very satisfactorily. The material is not entirely odorless, but the objectionable feature, we are told, is easily removed either by proper aging or by washing the tubes in cold water. Vapor impermeability is particularly satisfactory, so the toothpaste people found. Obstacle is machinery to manufacture it. But the molder claims Uncle Sam has given him a green light—providing he accepts orders for collapsible tubes for medical ointments or ethical products with high priorities.

Another collapsible tube we have been watching for a year is a spiral wound paper wall with a two-piece shoulder. Claim is made that the paper or other sheeting can be coated or treated for adaptation to many different products. Each product would have its own particular coating. Orders for considerable quantities for production line and market tests have been placed, it is said. At the present deliveries have not yet been made.

● **Tough Time for Shoe Polish**—Many small boys might rejoice if there were a shoe polish famine, but it's still a much-needed product. Metal cans make the perfect container—now forbidden. It's a product not used up too quickly and it dries quickly in the open air, so the packaging problem is none too easy. Recently we have heard of two claims regarding the development of successful substitute packages of laminated paper.

● **New Vinyl Copolymer Resin Coating**—Resistance to corrosive chemicals, to moisture and to extreme weathering are some of the qualities manifested by Resin VMCH for which packaging applications are commencing to appear. Clear paper coatings containing this resin show improved adhesion to oil-base paints and to many types of papers. Indications are that these coatings may prove useful in forming seals.

● **Good Earth Becomes a Coating**—Can you imagine a coating made of a substance resembling clay which can be applied to paper or paperboard to give it strength and impermeability. Predictions are that this coating, applied to spiral wound paper cans will serve for paint containers. When mixed with pulp, it is said, the combination can be molded to form containers. Who makes it, we hope to tell you soon.

YOU CAN READ ABOUT IT IN 20 SECONDS - - -

● *Here's some cheerful news on the home front*

Long before orders out of Washington put "materials as usual" on the shelf for the duration, Crown's Research Engineers were hot on the trail of alternate liners and coatings with which to loosen up the tight situation they saw developing. Evidence of their success is the way in which one wartime sealing problem after another has been met and mastered by Crown's Closure Division . . . effectively and economically!

It is perhaps unnecessary to add that while every millimeter of material now being used in Crown Closures is fabricated in exact accordance with government specifications, Crown's high-speed, precision methods of operation still assure you of the utmost possible speed in delivery and the highest possible quality in the finished products!

CROWN'S WARTIME POLICY: *To supply closures, containers and services for packaging foods, beverages, chemicals, etc., needed by civilians and the armed forces. To build an ever-increasing volume of vitally needed weapons of war for our fighting men.*

CROWN CORK AND SEAL CO., BALTIMORE, MD.
World's Largest Makers of Closures for Glass Containers

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WASHINGTON REVIEW

Summary of current situation and limitation orders

● **"Everything is for war"**—Donald Nelson says the term "Civilian program" is a misnomer—everything today is for a war economy. Asked about eliminating civilian goods, he replied, "There aren't many more to be eliminated."

● **Get Set for Concentration**—WPB continues to draw up blueprints for concentration but many questions are still unsettled. Joseph L. Weiner, Deputy Director of the Office of Civilian Supply, made this significant remark: "We have not yet discovered any basis for a general policy either to eliminate or retain private brand names. In some instances, particularly where an article has been standardized, even the industry itself may wish to eliminate brand names. In other cases, the concentrated industry may prefer that brand names be retained. In any event, the elimination of brands does not seem to be necessary for its own sake."

● **Burdens to Be Lifted**—Realizing the heavy job business has in answering government questions, the Bureau of the Budget is planning to utilize business men themselves to help frame questionnaires. Simplification plan is expected to go into effect January 1.

Similarly, OPA has issued the first of a series of revisions of maximum price regulations designed to convert the language to a simple narrative and explanatory style. First one applies to wooden containers.

● **Containers Industry Technical Committees**—William W. Fitzhugh, Deputy Chief of the Container Branch, announces organization of voluntary groups to aid in development of substitutes for tin, steel and other critical materials. Submit your problems to the Branch, Mr. Fitzhugh invited, with description of substitution efforts; problem will go to proper committee for practical assistance.

● **Controlled Materials Plan**—If you are directly or indirectly concerned with production involving use of steel, copper and aluminum, write to the nearest WPB field office for your copy of the pamphlet explaining this plan in full.

● **Price Regulation of Christmas Packages**—Users of Christmas packaging should study supplementary Order 24, issued October 30 by OPA, which sets the normal maximum price for products of which the packaging consists primarily of paper or ordinary cardboard on articles sold the year round. Articles which are seasonal only and package in other material have their maximum price determined by formula in Section 3 (a) of the General Maximum Price Regulation. This Order, effective November 2, is limited to packaging done by the manufacturer or the producer.

● **Top Priority for Repairs**—To keep civilian economy healthy WPB by November 11 Order authorized top priority rating of AA-1 for essential repair and maintenance.

● **Paper**—New chief of the Paper and Pulp Branch is Arthur G. Wakeman, formerly of Fox River Paper Corp. who succeeds David J. Winton, resigned.

Bulletin from Printing and Publishing Branch, October 21, forecasts strict paper control thus: "The critical shortage of manpower in logging camps of certain areas, coupled with power shortages in some paper-making areas and an overall transportation shortage, makes necessary the elimination of non-essential use and waste of paper. Inventory restrictions on paper again became applicable on October 1, 1942. During the summer months these restrictions were lifted and consumers were permitted to build up inventories in order to relieve an anticipated fall transportation shortage."

Order M-251 issued October 20, 1942, provides control of pulp wood, requires monthly reports of consumption and inventory and provides for allocation if needed. Schedules were added October 26.

Order M-241 issued October 30 by joint action of Canadian and American governments, fixes paper production to 100 per cent of the average monthly quantity for the 6 months' base period from April 1, 1942, to September 30, 1942. Further curtailments may be expected.

MPR 187 issued November 11 by OPA authorizes manufacturers of paperboard products to use their published price list of October 1941 to establish their ceiling prices.

● **Personnel Changes**—William W. Fitzhugh has been named Deputy Chief of the Containers Branch of WPB. Franklin R. Kelly has been made Chief of the Folding and Set-up Box Section. R. S. Solinsky was appointed Chief of the Metal Can and Tube Section. Roswell C. Mower was assistant to Charles L. Sheldon for just a short time before being appointed Chief of the Glass Containers and Closures Section from which post Philip S. Hardy resigned recently.

● **Metal drums**—Order M-255 issued by WPB November 2 prescribes complete allocation control of new steel shipping drums and parts. Reason: "Steel drum containers, used for packing such products as oil and gasoline, are essential for shipment of supplies to the armed forces and for other purposes connected with the war program."

Order L-197 issued September 14 was amended October 23 to add 34 more products which may not be packed in steel drums. The latest order (M-255) prohibits the use of new drums for packing permitted products without authorization.

OPA's price schedule 88 on petroleum and petroleum products prescribes method of price determination for containers and for deposits on containers.

● **Metal Containers**—Order M-136 which was issued July 22 has been amended October 23 and November 2 by addition of numerous products on the restricted list, including oil paints; resin emulsion water paints; paste; varnishes; drying oils; pigmented lacquers; printing inks; duplicating inks; lithographing inks; baking powder; lye; various oils and greases. NOTE: Percentages of restriction vary for different items. For full particulars see the Order.

Order M-81 has been changed by addition of amendment No. 4, October 20, and amendment No. 5, November 4, both of which make additional restrictions in the use of tin and terneplate containers.

Order M-237 revised October 30 contains lists of canned food products, the amounts of which are restricted for delivery for civilian use.

Fruit and vegetable packers, by amendment to Preference Rating Order P-115 issued October 27, are assigned higher preference rating for material and machinery, for replacement, maintenance and repair.

● **Collapsible Tubes**—October 22 amendment to M-115 permits gifts to armed forces without tube exchange.

● **Plastics**—Effective date of Thermoplastic Order M-154 was postponed to January 1, 1943, by amendment No. 4 issued October 31.

Order M-246 issued November 4 takes full control of phenolic resins and phenolic molding compounds.

Order M-254 issued October 26 restricts uses para-phenyl-phenol resins.

● **Increased Packaging Costs Recognized by OPA**—October 17 Order of OPA permitted upward readjustment of maximum prices for sweeping compounds sold by four producers who presented evidence showing that the use of plywood drums in place of steel drums will increase container costs 100 per cent. Relief granted is temporary and, because the four concerns sell only to industrial users and the government and not civilian consumers, the adjustment will not affect the cost of living.

APPENDIX TO YOUR WAR CONTRACT

• Packages designed for military and Lend-Lease specifications shown in new booklet

WAR contracts are different—and so is war packaging. If you have prime or sub contracts, or prospects, this booklet can give you invaluable assistance in the packaging problems you are going to meet. It illustrates a wide range of accepted war product packages: ammunition, foods, parts, subassemblies and finished units for military and allied uses.

Government departments have worked with Container Corporation laboratories in developing many packages for war products—packages that expedite handling, cut out waste and damage, save time, materials and shipping space, and meet the special specifications of war work.

Write today for your copy of this booklet, the first published in this specialized field. Our packaging experts can give you details of the war packages illustrated, and of many others. A discussion can save you time and perhaps money—and may save you much grief.

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Please send me immediately a copy of "Paperboard Goes to War," your new booklet on wartime packages.

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EVERYTHING PAPERBOARD FOR EVERYTHING PACKED

U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at 10 cents each.

TOOTH BRUSH AND POWDER HOLDER. R. J. Byrum, Grand Forks, N. Dak. U. S. 2,297,826, Oct. 6. A combined receptacle and tooth brush carrier, comprising an elongated receptacle body having a closure wall at one end having a central opening. The receptacle has a discharge opening in its side wall adjacent the said one end and a cap formed to receive the said one end of the receptacle to close said discharge opening and to cover the head of a tooth brush which has its handle disposed in said tube.

COSMETIC CASE. L. S. Reller, Chicago, Ill. U. S. 2,297,984, Oct. 6. A vanity kit container adapted to be carried in a lady's purse, said container comprising a body portion having a back wall, a bottom wall and end wall but open at the top, article segregating and holding members fastened to said body to hold these articles in proper position.

TOILET KIT. J. Rocca, Graterford, Penna. U. S. 2,298,417, Oct. 13. A toilet kit comprising a body portion having an open ended compartment therein, a follower in said compartment, spring means for oscillating said follower, a stud carrier by the follower and extending through a slot in the wall of the compartment and cooperating with one wall of the slot for holding the follower in its vertically adjustable position.

REINFORCED PACKAGE. L. L. Salfisbert (to Ivers-Lee Co., Newark, N. J.). U. S. 2,298,419, Oct. 13. A package containing a fluent substance, comprising two pieces of flexible material each having edge portions folded and returned upon itself, said pieces being arranged with said edge portions of one piece nested within the corresponding edge portions of the other piece and facing in the opposite direction.

MARKED AND SCORED PACKAGE. L. L. Salfisbert (to Ivers-Lee Co., Newark, N. J.). U. S. 2,298,420, Oct. 13. An infusion package comprising layers of tough, porous, fibrous material that is capable of being burned, said layers being sealed together at their margins into flanges and forming a container portion for an infusible substance and a separate tag portion on the flange at one margin.

DISPLAY PACKAGE. L. L. Salfisbert (to Ivers-Lee Co., Newark, N. J.). U. S. 2,298,421, Oct. 13. A display package containing powder and comprising an opaque back sheet having the same color at both sides, a transparent sheet overlying one side of said opaque sheet, and having all marginal portions except one sealed directly to the corresponding marginal portions of said side.

PACKAGE SEAL. W. B. Bronander, Montclair, N. J. U. S. 2,298,462, Oct. 13. The combination with a container having a closure cap of sealing means.

CONTAINER. W. A. Clanon (to The American Paper Bottle Co., Toledo, Ohio). U. S. 2,299,461, Oct. 20. A sheet paper container of self-supporting type comprising a body portion for the reception of goods and a top portion which constitutes a folded and sealed extension of the body.

BOX. J. F. Cleary, Kansas City, Kans. U. S. 2,297,941, Oct. 6. A box including an open top body having oppositely arranged walls provided with downwardly open pockets, closure members having hook-like flanges engageable in these said open pockets.

COLLAPSIBLE MULTI-COMPARTMENT CARTON. R. C. Potts, Takoma Park, Md. U. S. 2,297,982, Oct. 6. A carton comprising a body portion consisting of side and end walls, an internally located transverse partition, top flaps and bottom flaps for closing the top and bottom openings, respectively, of the body portion of the carton.

CARTON. E. T. Ryerson (to The W. E. Long Co., Chicago, Ill.). U. S. 2,297,987, Oct. 6. A carton formed from a single piece of material with bottom wall section, a pair of end walls bent to extend upwardly from said bottom wall, said end walls each having flaps along its side and top edges folded at right angle to said end wall of the carton.

ASH TRAY. C. M. Mersbach, Chicago, Ill. U. S. 2,298,146, Oct. 6. A discardable ash tray open at the top and formed from a single blank of flexible relatively stiff paper or the like faced on both surfaces with bright heat-reflecting metal foil, said foil functioning to prevent transmission of damaging heat to whatever surface is supporting the tray.

DISPLAY DEVICE FOR CONTAINERS. H. L. Myers, Morristown, N. J. U. S. 2,298,897, Oct. 13. The combination of a merchandise container including a bottom and a display device comprising a main section secured to the bottom of said container in surface engagement therewith and provided with a locking opening cooperating with said bottom to form a locking recess.

DISPLAY CARTON. E. J. Novak, Chicago, Ill. U. S. 2,299,027, Oct. 13. A carton with front, back and side walls, with side walls cut back adjacent the ends of front wall opening whereby a portion of the articles to be next dispensed from said opening will be exposed sufficiently to be manually gripped so as to remove article from said opening.

TRANSPARENT RECEPTACLE. W. Ungemach, Bronx, N. Y. U. S. 2,299,194, Oct. 20. A receptacle constructed from a sheet of thin flexible regenerated cellulose material, said sheet being cut and creased to define a main wall, side walls and side wall flaps.

DISPENSER. R. T. Cornelius, Minneapolis, Minn. U. S. 2,297,945, Oct. 6. A dispenser for powder contained in a can having a perforated top, said dispenser comprising a shell having a dispensing top and a tubular wall structure open at the lower end and adapted to receive the can.

DISPENSING PACKAGE. F. W. Nitardy (to E. R. Squibb & Sons, New York, N. Y.). U. S. 2,297,690, Oct. 6. A collapsible tube having an outlet, and an impervious plug of deformable and expressible solid material in the bore of the tube at its outlet end, at least part of the plug within the tube being of larger diameter than the outlet.

CONTAINER CONSTRUCTION. F. Neuschaefer, Rye, N. Y. U. S. 2,299,277, Oct. 20. A container formed of substantially transparent material and adapted to contain liquid preparations for treating the fingernails, a wall of said container having a curved surface to simulate a fingernail.

MANICURE ACCESSORY. B. Pickard, Chicago, Ill. U. S. 2,300,170, Oct. 27. A tray comprising a body portion, said body portion having a cavity adapted to hold nail coloring container means, moon-shaped fingernail display means positioned adjacent the said cavity.

METHOD FOR WRAPPING FIRST AID DRESSINGS. H. Ganz (to Johnson & Johnson, New (*Continued on page 128*)

Worth looking into!

You'll say there *is* a Santa Claus when you see how well glass can solve your packaging problem! That's why it's worth looking into. In addition, it's plentiful...and its use helps Uncle Sam conserve precious steel, tin and tinplate!

There are other reasons, too, why so many manufacturers are using Anchor Hocking glass. Many new developments are responsible for the array of excellent advantages it gives you today. But that's not all. Anchor Hocking also gives extra benefits at no extra cost...the services of its experts in engineering and in biological and chemical research. These men know their business inside out, can be helpful to new users of glass in many ways, including simplifying and expediting change-over.

Today—call in your friendly Anchor Hocking packaging engineer. Ask him about the Anchor Hocking complete package—container *and* closure, made for each other by one company, available from a single supply source. And remember—whether you want the complete package or the containers and closures separately, your best buy is Anchor Hocking!

Worth looking into! *The Anchor Hocking Economy Jar Line*

...tled with the Anchor Amer-...l Cap, the economy jars illus-...ted make ideal, economical ...kages for mayonnaise, salad ...ssing, peanut butter, pre-...es, pickles, olives, apple but-... and many other products. ...ey cut packaging costs...are ...gh and light...inexpensive ...ship...provide maximum ... appeal for maximum buy ...peal...step up profits. Avail-...e in complete range of pop-...r sizes. Samples on request.

The Anchor Amerseal Cap... Its equally spaced lugs engage under side of glass container lugs, draw cap down, compress liner in tight, even, *complete* contact with container finish. No thread matching, as in screw caps. A quarter turn and it's off or on. Will not gum or freeze to container finish.

ANCHOR HOCKING

GLASS & CAPS

ANCHOR HOCKING GLASS CORPORATION • LANCASTER, OHIO

Brunswick, N. J.). U. S. 2,298,363, Oct. 13. Method for the complete wrapping and sealing of first aid units, which comprises spotting the units upon a travelling strip of the wrapping material.

COFFEE PACKAGE. H. F. Waters, New York, N. Y. U. S. 2,298,545, Oct. 13. A package particularly adapted for coffee which evolves a gas upon standing and which is subject to deterioration upon exposure to air, including a container having an outer ply of paper, an intermediate ply of partially cured sheet rubber, an inner ply of grease-proof sheet material.

PACKAGING MACHINERY. H. L. Evans (to U. S. Automatic Box Machinery Co., Inc., Roslindale, Mass.). U. S. 2,299,474, Oct. 20. An endless track circuit for package machinery.

FILM PRODUCING PROCESS AND APPARATUS. W. C. Eberlin (to E. I. du Pont de Nemours & Co., Wilmington, Del.). U. S. 2,300,211, Oct. 27. The process of dry casting sheets and films from film-forming solutions.

CONTAINER AND SEAL THEREFOR. J. E. Roach, Forrest Hills, N. Y. A container having tapered side walls and bottom, a closure cap for closing the open side of the container, a flange defining the peripheral edge of the closure cap and overlying the side walls of the body portion in spaced relation thereto.

CARTON LINER FOR MOLDED EDIBLES AND METHOD OF FOLDING. C. Doering (to H. H. Doering one-half equity, Chicago, Ill.). U. S. 2,297,946, Oct. 6. A carton liner for rectangular packages comprising a rectangular sheet of material folded upon itself to provide a creased bottom line and joined by sealing at its side edges to define an open envelope having unsealed top adjacent to edges.

CONTAINER. H. A. Eggerss, Van Wert, Ohio. U. S. 2,299,616, Oct. 20. A container structure made of fibreboard or the like and being of annular cross section with metal reinforcing band surrounding the end of said body portion.

FOLDABLE CARDBOARD BOX. M. Hyndman, St. Louis, Mo. U. S. 2,298,-565, Oct. 13. A foldable box made from a one-piece blank including two side walls and two end walls, side tabs having permanent integral hinge connection with the lower edges of said side walls, and arranged to cross and interlock when opened.

PROCESS AND APPARATUS FOR PACKAGING ARTICLES. W. S. Cloud, Wilmette, Ill. U. S. 2,295,335, Sept. 8. In a packaging machine the combination of means for holding and crimping simultaneously the bottom ends of a plurality of joined paper receptacles.

PACKAGING MACHINERY. S. J. Campbell, Green Bay, Wis. U. S. 2,296,142, Sept. 15. The combination with means for feeding articles to be wrapped, a cut-off knife, and means for operating the cut-off knife periodically across a predetermined path in synchronism with the rate at which articles are supplied.

MACHINE FOR LOADING AND DISCHARGING CONTAINERS. H. B. Thompson (to Peter Paul, Inc., Naugatuck, Conn.). U. S. 2,296,802, Sept. 22. A support for receptacles to be loaded, means for intermittently feeding the receptacles along said support.

METHOD OF MAKING DUPLEX CONTAINERS. R. M. Bergstein, Cincinnati, Ohio. U. S. 2,296,896, Sept. 29. Method of making knock-down container which includes providing flat cut and creased blanks with flexible, fusible liners secured to the inner surface thereof.

MACHINE FOR THE AUTOMATIC PACKING OF SHUTTLES AND LIKE TOOLS INTO CASES. A. Scotti, Schio, Vicenz, Italy, vested in the Alien Property Custodian. U. S. 2,297,253, Sept. 29. A machine for automatic packing of shuttles and similar objects in packing cases.

SYSTEM OF WRAPPING ARTICLES. W. Rasch and H. Ballerstein, Wernigerod, Germany, vested in the Alien Property Custodian. U. S. 2,297,432, Sept. 29. A process of wrapping articles having at least one substantially plane surface, in steps of wrapping sheet around article in the form of a hose.

METHOD AND APPARATUS FOR EXPANDING SHEET MATERIAL. R. F. Norris and G. H. Nelson (to Research Products Corp., Madison, Wis.). U. S. 2,294,748, Sept. 1. The method of making expanded paper which comprises advancing a strip of paper at a predetermined rate while supporting it laterally.

MULTI-PLY BAG. A. E. Currier (to Bagpak, Inc., New York, N. Y.). U. S. 2,294,364, Sept. 1. A bag blank composed of a plurality of nested tubes of paper secured together at their end edges by strips of adhesive.

PACKAGE WITH MOUNT. F. G. Steiner (to Steiner Sales Co., Salt Lake City, Utah). U. S. 2,295,018, Sept. 8. A package of paper sheets having a hanger attached thereto, said hanger having a projection which passes through slits of the sheets and which acts as a knife by which the sheets are torn when pulled by the user.

PACKAGE AND PACKAGING. C. G. Muench (to The Celotex Corp., Chicago, Ill.). U. S. 2,295,287, Sept. 8. The process of forming fibrous bagasse and like substances with 3 to 18 per cent moisture content into hard and dense self-sustaining unit packages.

MANUFACTURE OF ARTIFICIAL MATERIALS. J. H. Rooney and P. R. Hawtin and S. R. Chaplin (to Celanese Corp. of America, a corporation of Delaware). U. S. 2,293,174, Aug. 18. A device for use in introducing coloring agents or other desired constituents into films, foils and like products during their production by the evaporation of a volatile solvent from a layer of dope on a traveling support.

RECEPTACLE. T. M. Patten, Rolla, Mo. U. S. 2,291,753, Aug. 4. A receptacle having side walls joined together to form an enclosure and a bottom wall secured to said side walls and extending up into said enclosures.

CAPILLARY SIPHON FEED. N. S. Serinis (to Imperial Rayon Corp., a corporation of Delaware). U. S. 2,293,922, Aug. 25. A feeding device for liquid comprising a vessel, means for maintaining an approximately uniform level of liquid therein, said vessel having a discharge orifice therein at a level near the top of the liquid, and capillary discharge means traversing said orifice and cooperating with the side wall of the vessel.

CONTAINER AND METHOD OF MAKING CONTAINERS. O. Johnson, Bronxville, N. Y. U. S. 2,293,142, Aug. 18. The method of making container, which comprises providing a tubular body, inwardly collapsing and forming the collapsed portions of the wall of the body to concave form longitudinally of the body and intermediate the ends thereof by means engaging the outer side of the body and, while holding the body in said condition, the means are engaging and securing a closure in an end thereof.

AN AMERICAN INSTITUTION WORKING WITH AND FOR AMERICA

And you will not be, Uncle Sam. Your resources in manpower kept strong and healthy by the nourishing products of our sacred soil will win ultimate victory. These foods-for-freedom, born on America's fertile farms and ranches, must travel far to reach our "fighting forces" at the front, in camps, war plants, and in homes throughout our land . . . and, most importantly, must arrive uncontaminated with their nutritional values preserved and with shrinkage held to a minimum. To safeguard such foods throughout handling, shipment and storage is vital war work. It is this type of service to which we, at Rhinelander, gladly devote night-and-day effort in the production of protective packaging papers acclaimed as the world's finest.

Folke Becker
PRESIDENT
RHINELANDER PAPER COMPANY

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Papers

FROM THE BEST THAT'S MADE TO THE CHEAPEST THAT'S GOOD

Genuine Greaseproof
Coffee Bag Papers
Confectionery Papers
Cereal Wrapping Papers

Laminated Greaseproof Papers
Lard and Shortening Liners
Bakery Product Wraps
Laminated Frozen Food Wrappings

Cracker Box Liners
Greaseproof Innerwraps
Glassine Papers, Plain, Colored & Embossed

Wax Laminated Glassine
Opaque Label & Bag Glassine
Packing Industry Wrappings—and Specialties to order

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Plants and People

Edward T. Gardner, Jr., assistant to the president for The Gardner-Richardson Co., Middletown, Ohio, has taken a leave of absence from his company to join the Pulp and Paper Branch of the War Production Board. Mr. Gardner will leave immediately to take active charge of the Paperboard Unit. This is the unit responsible for all of the factors relative to production and set-up boxboards and is one of the units of the Paper and Paperboards section of the Branch.

Edward T. Gardner, Jr.

The Armstrong Cork Co. has been advised by Robert P. Patterson, Under Secretary of War, that the Army and Navy Departments are awarding the Army-Navy Production Award to employees of the local Floor Division and Closure Plants for "their fine production of war equipment." Armstrong, which started its war production program in 1939 shortly after the outbreak of hostilities in Europe, has converted a large percentage of its manufacturing capacity to turning out war goods. Included in its list of items are shells, plane parts, bombs and other war equipment. Normally the company is a non-metal working concern.

Chicago office of the Folding Paper Box Assn. of America has been changed to 134 North LaSalle Street. These offices are more centrally located than the old ones. In the near future, the association plans a display of conversions and special boxes.

Owens-Illinois Pacific Coast Co. announces the removal of its offices to The Butler Building, 135 Stockton Street, San Francisco, Calif.

Einson-Freeman Co., Inc., has added Harold Hart, well-known contest expert, to the creative and sales staff of the company. In accordance with the company's policy of creating specialized promotions for its clientele, Mr. Hart's services will be available as contest consultant.

Elmer Z. Taylor, president and founder of Mono Service Co., has had the last of the first machinery used in the manufacture of the company's paper food containers broken up for salvage. This machinery was designed more than 30 years ago and has been in use since that time. To date the company has scrapped and turned into salvage nearly 150 tons of iron and steel, brass, copper, aluminum and rubber.

L. L. Grisamore, recently appointed general manager of Arvey Corp., announces new appointments and officers elected at a board of directors' meeting: Paul Godell, vice-president, is now national sales manager in charge of all sales, with William H. Carmichael, head of the Philadelphia branch, receiving the responsibility for sales in the Eastern Division. Royal A. Hoffman has been elected vice-president and manager of the Eastern Division. Arvey Corp., converters of cardboard and other point-of-purchase display advertising specialties, are now devoting the greater part of their facilities to the war effort in the processing of paperboard, metals and plastics.

Frank K. Greenwall, president of National Starch Products, Inc., has been elected a director of the American Management Assn. and appointed a chairman of the Packaging Exposition.

Crucial problems arising from the war and affecting every American business man will be thoroughly covered during the three-day War Congress of American Industry that convenes at the Waldorf-Astoria, New York City, December 2, 3 and 4, William P. Witherow, president of the National Assn. of Manufacturers, announced. "Making America Strong—War Power, Man Power, Peace Power" is the theme of the congress. The preliminary program includes Donald M. Nelson, Executive Director of the War Production Board; William M. Jeffers, recently named Rubber Administrator, who is now on a country-wide tour studying that industry; and Hiland G. Batcheller, former president of Allegheny, Ludlum Steel Corp., and now head of the Iron and Steel Division of WPB. The subject of "Mobilizing Manpower" will be discussed by Paul V. McNutt, chairman of the War Manpower Commission, and Leon Henderson, administrator of the Office of Price Administration, will speak on "Rationing, Rent and Price Control."

At the annual meeting of the American Trade Assn. Executives, held in the Hotel Pennsylvania, New York, November 5 and 6, the following officers were elected: Vincent P. Ahearn, executive secretary of the National Sand and Gravel Assn., president; Wesley Hardenberg, president of the American Meat Institute, and Frederic R. Gamble, managing director of the American Assn. of Advertising Agencies, vice-presidents; and William A. Penrose of Ferry & Dawson, treasurer.

A five-day "Wartime Conference" will be held by the National Retail Dry Goods Assn., during the week of January 11 to January 15, at the Hotel Pennsylvania in New York City. This national gathering of retailers supplants the traditional annual convention, according to Lew Hahn, general manager of the association. "The Effects of the War on Retailing during 1943" will be the subject of the opening general session. Other subjects scheduled for discussion are: Manpower, Customer Services, Limitation of Inventories, Taxation and Credit, Transportation, Price Regulation, Merchandising and Sales Promotion, and Post War Planning. There is also scheduled a special Wrapping and Packing Clinic.

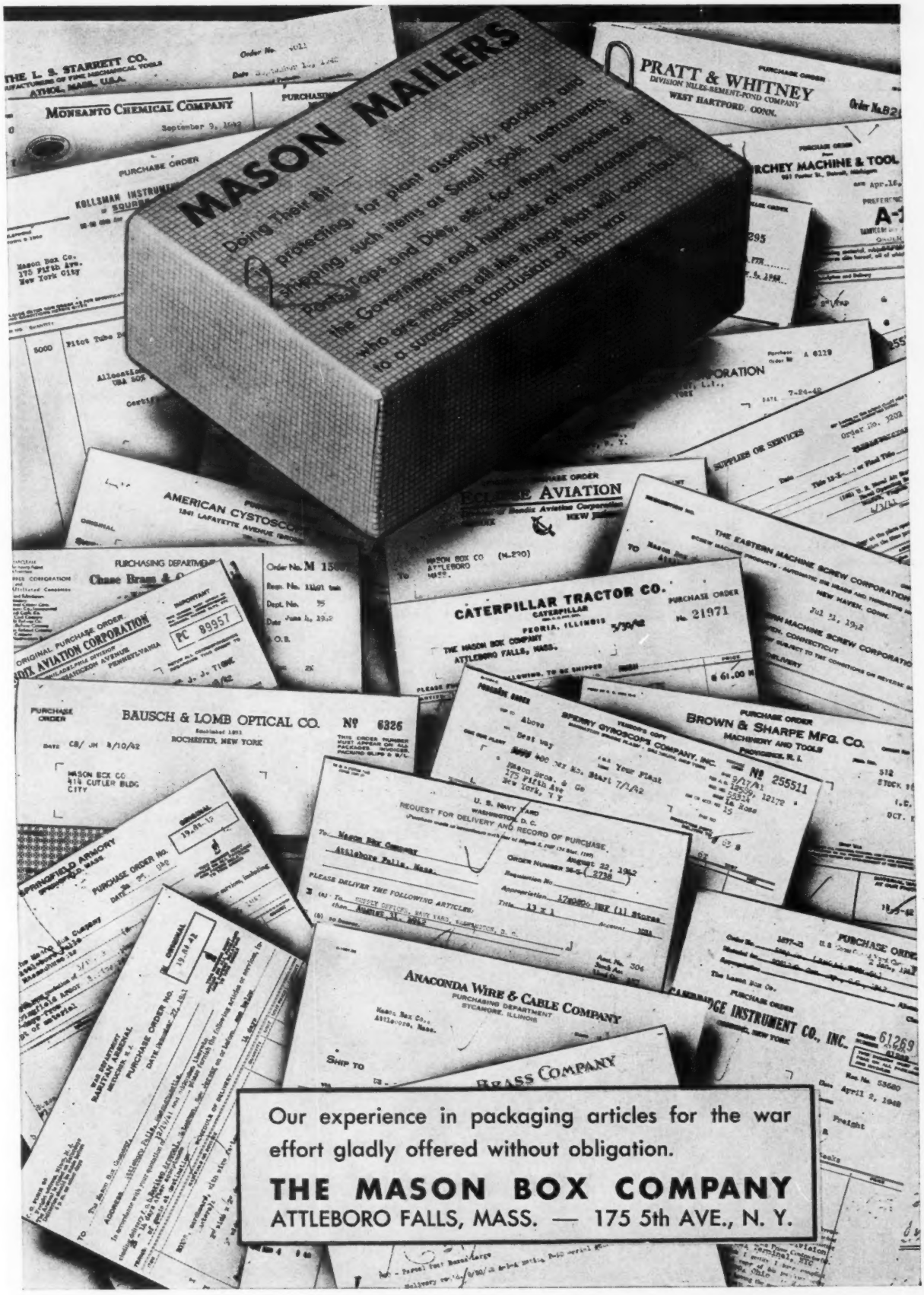
William M. Jeffers, National Rubber Director, has appointed Morehead Patterson, president of American Machine & Foundry Co., as assistant to Colonel Bradley Dewey, Deputy Rubber Director. Mr. Patterson has wide experience in organizational problems and in the production and use of high speed machinery.

Promotion of William R. House, Owens-Illinois Glass Co. sales executive, to the position of branch manager of the Buffalo, N. Y., sales office of the company, has been announced by Smith L. Rairdon, vice-president and general sales manager.

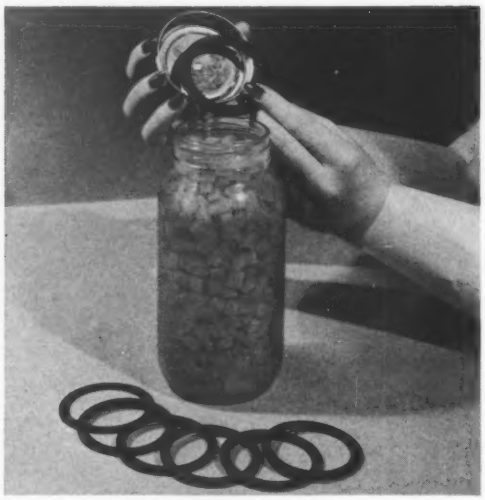
Label Manufacturers National Assn. held its 26th annual meeting in Chicago on November 12, 13 and 14. The association approved a plan which has the endorsement of the WPB to place on can labels an emblem or design to instruct housewives regarding the salvage of cans for recovery of the metal for war purposes. New officers elected were: president, Theodore C. Nevins; vice-president, Ted Fleming; treasurer, Hugo Dalsheimer; and secretary, Charles R. Cosby.

OBITUARY

George M. Simmons, vice-president and director of National Starch Products, Inc., died suddenly October 26 at his home at Columbia Heights, Brooklyn, New York, at the age of 59.


MASON MAILERS
Doing Their Bit —
protecting, for plant assembly, packing and shipping, such items as Small Tools, Instruments, Pantex Taps and Dies, etc., for many branches of the Government and hundreds of manufacturers who are making all the things that will contribute to a successful conclusion of this war
THE L. S. STARRETT CO.
MONSANTO CHEMICAL COMPANY
PRATT & WHITNEY
DIVISION NILES-BEMENT-POND COMPANY
WEST HARTFORD, CONN.
CATERPILLAR TRACTOR CO.
PEORIA, ILLINOIS
THE MASON BOX COMPANY
ATTLEBORO FALLS, MASS.
BAUSCH & LOMB OPTICAL CO.
ROCHESTER, NEW YORK
BROWN & SHARPE MFG. CO.
ANACONDA WIRE & CABLE COMPANY
PURCHASING DEPARTMENT
SYCAMORE, ILLINOIS
REQUEST FOR DELIVERY AND RECORD OF PURCHASE
Our experience in packaging articles for the war effort gladly offered without obligation.
THE MASON BOX COMPANY
ATTLEBORO FALLS, MASS. — 175 5th AVE., N. Y.

Equipment and Materials



NON-RUBBER JAR RING

Detroit Gasket & Mfg. Co. announces the development of a new plastic material peculiarly applicable as a jar-closure sealing ring for both home and commercial canning of foods. According to a statement from the company, this new jar ring has stood up under every test applied by the Department of Agriculture and by responsible packers in actual canning operations. The material is described as a flexible, thermoplastic composition and the raw material is readily available at the present time in unlimited quantities. The company recommends the closure for all three of the common commercial canning seals—top seal, side seal and edge seal. It does not recommend the ring for some shoulder-type seals inasmuch as the sharp edge of the lid may cut through and cause a very poor appearance and possible leakage. Important to commercial packers is the fact that this replacement material, in combination with all-glass containers now on the market, removes critical materials from their needs. Neither metal nor rubber is necessary, the company states, in this form of pack. The sealing ring is resistant to weak acids (including vinegar) and alkalis. However, it is not oil-resistant and cannot be used for salad oil preparations and similar materials at the present time.

Lloyd H. Diehl, president of the company, says he intends making the process available to other responsible manufacturers to insure sufficient supply of this food-packing item. Any ring manufacturer now using rubber can easily convert to the new material with only very minor adjustments to his existing equipment, it is said.

WPB MACHINE SHOP CHART

Prompted by the serious shortage of gauges, measuring and dimensional control devices vital to the mass production of many ordnance parts and other war items, the New York-Northern New Jersey office of the WPB has issued a chart prepared to show machine shop owners whether their present equipment is adaptable to this work. The chart indicates in simple, graphic form the basic machine shop operations and the type of labor required in making gauges commonly used by the ordnance departments of the armed forces. A supplementary chart sets forth standard wear allowances and gauge-makers' tolerances. The gauge-making chart is available for inspection at all WPB district offices in New York and Northern New Jersey. The chart, which indicates at a glance if a machine shop is basically qualfied to make gauges, employes the same technique as a series of industry operations charts recently issued by WPB, pertaining to needle working, woodworking, plastics and leather and canvas goods.

UREA FORMALDEHYDE RESINS

According to the Resinous Products & Chemical Co., manufacturers of solid fibre and corrugated board are finding urea formaldehyde resins to be valuable in adapting their products to the needs of the war program and that the use of the company's Uformite 500, a urea formaldehyde type resin, supplied in dry powder form, is proving to be of great value. A practical method of obtaining sufficiently water-resistant glue lines is through the use of a small amount of Uformite 500 with an unborated dextrin, the company states. There are a number of plants now operating on a resin fortified glue using Uformite 500 and to the company's knowledge, unless the resin concentration be higher than 7–8 per cent on the weight of the dry dextrin, obtain a working life or stability of at least one 8-hour shift. Many of them, the company says, even without addition of alkali, hold the glue over a week-end and find it perfectly usable on Monday morning.

CHEESE WRAPPERS

New wrappers for Camembert, Blue, Brie, and Liederkranz among others, have been placed on the market by General Felt Products, Inc. These represent a replacement for former foil wraps, are made of moisture-resistant cellophane coated with specially processed waxes and are very flexible.

ZINC-PLATED STEEL SHEET

A new metal has been added to the line of plated metals produced by the American Nickeloid Co. It is electroplated zinc on steel which, the company says, is a satisfactory substitute for pure nickel, tin, chromium, aluminum or stainless steel. It can be bent, stamped, formed, drawn, soldered and spot-welded to meet most production requirements.

NON-METAL BAG FASTENER

Milprint, Inc., has developed a practical, economical replacement for all-metal bag fasteners. It closes the bag tightly and permanently, has space for advertising message and can be reclosed by the consumer after the bag has been opened. The fastener is made of paper and comes in different sizes to fit various sizes of bags, is unprinted or printed in two colors as may be desired. Printed type is shown at right in photograph.

Wartime Adhesive Service

ROUTINE CALLS: With many of our Service Engineers now in military or Government positions, and others handicapped by restrictions on gasoline, tires, etc., routine calls will be minimized. However, our service to you will always be our first concern. If you will let us know when you need help or service, we will see that a capable man is available to you on short notice.

DELIVERIES: These take longer today. Please watch your stocks and order well in advance. Also, if possible, increase the size of individual orders.

CONTAINERS: Larger unit packages not only save money and floor space, but help relieve the container shortage. Please send back all returnable containers to us, properly coopered, as soon as empty. Note, too, that some types of containers are no longer available.

PRIORITIES: If you have, or can obtain, a preference rating applicable to the products we furnish, please extend it with your orders, and give us the proper symbols. We must have these so that we, in turn, can protect our requirements of chemicals and other raw materials, maintenance supplies, transportation facilities, etc. which are necessary to our operation, and hence to our ability to serve you.

Your full cooperation will help us to help *you*.

NATIONAL ADHESIVES

DIVISION OF

NATIONAL STARCH PRODUCTS INC.

820 Greenwich Street, New York

For Your Information

The Bibliography and Survey on Lead Poisoning, which has been made under the direction of the Technical Committee of Packaging Institute, has been completed and arrangements are now being made for publication. It was compiled by Florence A. Brous, graduate chemist and librarian, under the supervision of Winifred Randall, librarian of Colgate-Palmolive-Peet Co. It is divided into three sections: Part I—Survey of Lead Poisoning; Part II—Translations and Abstracts of References on Tin-lined and Lead Tubes; Part III—General Bibliography of Lead Poisoning, consisting of approximately 5,000 references, covering the material which is recorded in the Archives of the Surgeon General. Packaging Institute is accepting orders now for the volume, prior to publication.

"The Development Possibilities of Paper for War Industry" is the title of a presentation prepared by Byron Weston Co. of Dalton, Mass. The information and reference data are of value to those interested in paper as a factor in the solution of some of today's pressing problems of materials and production. It also contains a fully illustrated description of the company's laboratory and production facilities. The company advises that a limited number of copies of this presentation are available and a copy may be obtained by writing directly to them.

S. C. Toof & Co. of Memphis, Tenn., has just published "The Organization and Training of Industrial Fire Brigades." It is a book aimed toward the safeguarding of business and industry against the hazards of fire and other destructive elements in the war emergencies, through the organization and training of private fire brigades. There are special chapters on Plant Inspection, Evacuation of the Plant, Emergency Communications, Sabotage, Defense Against Bombs and Gas, Rescue Work and Salvage Operations.

The elimination of approximately 10,000,000,000 metal cans from the packaging field this year has opened opportunities for glass containers not only to effect immense savings of steel and tin for use in the war effort, but also to help solve crucial problems in civilian food distribution, Edward J. Detgen, Chief of the Specialties Staff of the U. S. Department of Commerce, told the members of the Glass Container Assn. at a recent meeting in New York City. The glass industry, he stated, is actively engaged in research on container closures using the least amount of critical materials and early practical results are expected. He emphasized the seriousness of the impending container shortage, so far as civilians are concerned, in his challenge to the glass industry to solve its few remaining basic problems.

One of the instructors in the government dehydration school made this suggestion—that a product of The Davison Chemical Corp. might be used as an indicator to put in a package with a product to determine the approximate hygroscopic quality; this to be used as an easily read method of determining what moisture-proofness the package should have. Chemists of The Davison Chemical Corp., however, say their product "is not sufficiently definitive to be used in this application."

The Gerrard Co., Inc., Chicago, makers of steel strapping, has issued the second edition of its Red Book of Carload Stowage. Booklets are sent free on request.

The Market Research Department of Modern Magazines has just released the "7th Survey of Homemaking," a study of brand preferences for food and household supplies, conducted annually among readers of the various magazines of the Modern Group. Findings include analyses of brand preferences by income, city size and age of purchaser and cover a total of 99 household items. It is a 124-page volume, which is printed in two colors and attractively bound.

Bureau of Business Research of Harvard University has just published a report, "Advertising Programs for Products with Selected Distribution," written by Dr. James Dacon Scott, former member of the research staff at the Harvard Business School. The bulletin covers an investigation of the policies of 98 different manufacturers producing consumer goods marketed through selected channels of distribution. The reports sell for $1.50 and may be purchased from the University.

A leaflet explaining changes which can be expected in the canned food field and calling upon consumers to take the proper attitude toward these changes has been issued by the National Consumer-Retailer Council. The leaflet is being sent to consumer leaders and educators in the principal trading areas of the country. At the same time the Council is issuing a companion leaflet which is addressed to food distributors and which suggests ways in which they can supplement the Council's program to build customer understanding of the situation in respect to canned foods.

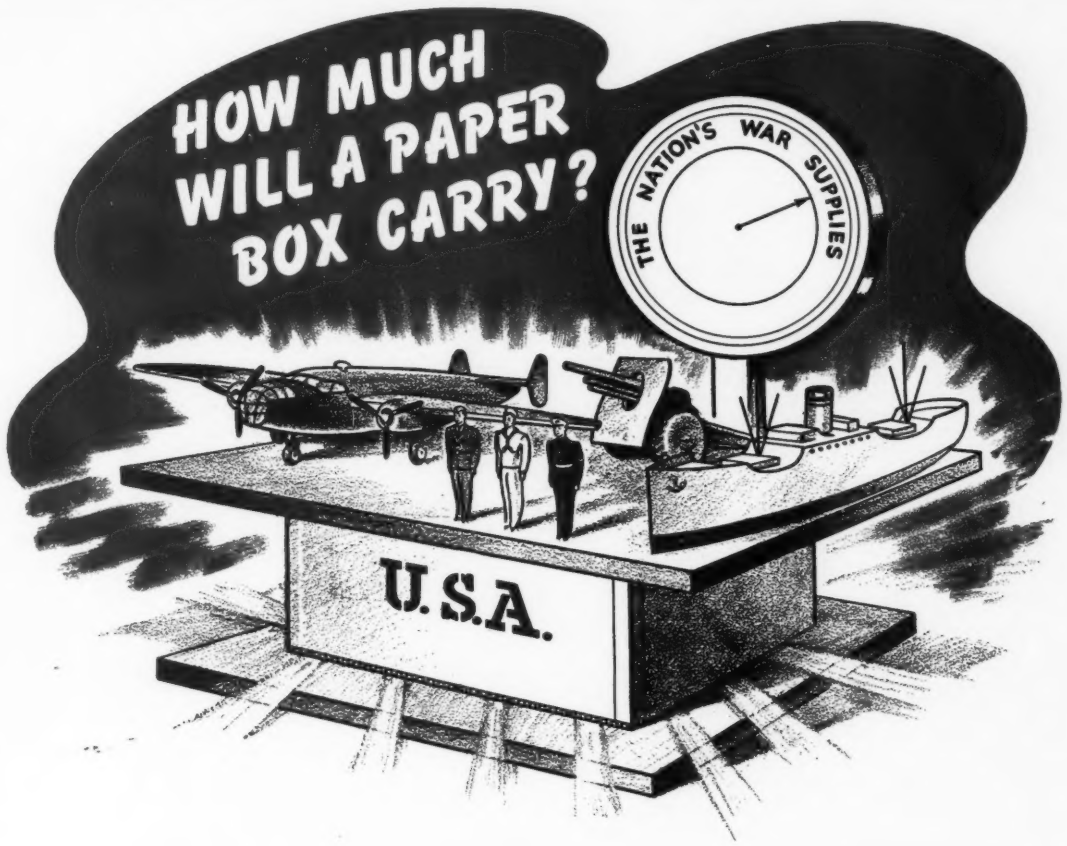
The Mennen Co., Newark, N. J., explains the non-appearance of their gift boxes this Christmas is due to the fact that large quantities of their shaving products are being used by the United States armed forces in this country and abroad. For this reason, the company says, "we believe the men at home will agree that the absence of Mennen gift boxes this year has been amply justified."

John Wesley Hyatt Award presented. The annual John Wesley Hyatt Award for an outstanding contribution to the plastics industry during the year 1941 was conferred on Dr. Donald S. Frederick, of Rohm and Haas Co. Dr. Frederick was honored for his work in adapting transparent, colorless acrylic plastics to the needs of American military aircraft. Prior to the successful development of sections of this plastic large enough to make the nose of a bombing plane, the use of plastics by the aviation industry had been limited to areas considerably smaller in dimensions. These large-size plastic sections, aviation experts believe, give to our planes an advantage not held by those of other countries. The award, established by Hercules Powder Co. last year, was named for John Wesley Hyatt, who is credited with having been the inventor, in 1867, of the first plastic—a mixture of nitrocellulose and camphor, out of which came the present-day celluloid. This was the first presentation of the Hyatt Award, which will be made annually by the John Wesley Hyatt Award Committee.

CORRECTIONS

In a description of the Plenamins display on page 70 of November Modern Packaging, the impression was given that Einson-Freeman Co., Inc., designed the display. The designer was Roland Baum of the United Drug Co., and Einson-Freeman Co., Inc., produced the unit.

Credit should have gone to the Sutherland Paper Co. for producing the "Cream White" shortening container, shown and described on page 36 of the November issue. The package consists of a cellophane bag in a fibre can and not a laminated package as was stated in the caption for the illustration.



IS there no longer a limit? Looking beyond laboratory tests, we see the war supplies of a great nation carried to the front, largely in paperboard packaging. Critical materials are saved.

Today, much of our production is going into the packaging of heavy and small arms ammunition, field rations, airplane parts, lend-lease foods, and other military needs.

New fields have been opened, old ones expanded. The rigid demands of new uses have brought lasting improvements in both folding cartons and shipping containers. These improvements are available to you.

THE OHIO BOXBOARD CO.

RITTMAN, OHIO

SALES OFFICES: RITTMAN CLEVELAND PITTSBURGH NEW YORK CHICAGO

500 TONS DAILY

Letters to the Editor

MUNSELL VS. OSTWALD COLOR SYSTEM

SIRS: We are quite in accord with the American War Standard for Specification and Description of Color recently approved by the American Standards Assn. All four provisions of this standard are in constant use here, the choice of provision depending upon the purpose to be served. Mr. Arens's treatment of color standards is somewhat confusing because it implies a contradiction between the Munsell and Ostwald systems where none exists. (*Ed. Note: See Modern Packaging, pp. 54–56, October 1942.*) He says, "In comparing the two systems, it should be borne in mind that the Ostwald system measures color by determining the content of hue, black and white, whereas the Munsell system measures color by introducing spectro-metric factors which both Hering and Ostwald believe to be irrelevant in ordinary, everyday color usage." As a matter of fact the spectrophotometer has been useful in the development both of the chips of the Munsell Book of Color and those of the Color Harmony Manual and Index. The Manual and Index owe much of their technical excellence to the use of the spectrophotometer by Mr. Foss, and chiefly on that account, we believe, are far more than "an exposition of Ostwald's ideas of accurate color measurement." Ostwald's proposals for organization of color deserve much more respect than his colorimetric methods which have been under criticism almost since their first exposition.

We have been prevented from using the Ostwald color system extensively because of a lack of authentic standards of that system. We have two publications, one obtained in 1921 from the Ostwald laboratory in Germany and a later one from Great Britain, both containing color chips purporting to represent the Ostwald colors. The color samples in these publications do not agree with each other except in a general way, nor does the Jacobson Color Harmony Manual agree with either. This lack of agreement is a hindrance to the use of the Ostwald color system for accurate color specification. The amount of the disagreement is, however, probably too small to be of importance in the composition of color harmonies for packaging.

Any of the very considerable advantages found by users of the Ostwald system in color design work can therefore legitimately be claimed for the Jacobson Color Harmony Manual and Index. Furthermore, the convenient arrangement of the chips and their technical excellence ought to lead to a considerably wider application of them to the selection of harmonious color combinations than has been enjoyed by other collections of Ostwald colors. If the Jacobson Color Harmony Manual and Index come into the wide use among Ostwald adherents which they deserve, they may come to be recognized, at least in America, as the authentic representation of the Ostwald colors. Should this occur, and should their colorimetric properties become accurately known, the color chips of the Manual and Index could serve the same purpose now served by the Munsell standards.

Whether it would be desirable, however, to use two alternate sets of working standards of color organized on such different bases as the Munsell and Ostwald systems is doubtful. If a choice has to be made between sets of working standards, that set which is most widely distributed and used would probably be the best choice. These difficult questions will arise whenever revision of the present American War Standard for Specification and Description of Color is considered by the American Standards Assn. Respectfully, NATIONAL BUREAU OF STANDARDS
U. S. Dept. of Commerce, Washington

SIRS: I am fairly well acquainted with the Ostwald system of color but I do not believe it to be as fundamentally sound as Munsell. There are a number of reasons for my opinion. The three dimensional system of Munsell has been made quite clear. The number of colors vary in each hue depending upon the pigments available to make them. This is a very helpful point for the layman as it gives him a better idea of the relative strength of pigments as well as the hues in the spectrum. The explanation and nomenclature of Munsell is much less complicated, we believe. If you were to devote the same amount of time to the study of both systems you would have, I believe, a much better understanding of Munsell than you would have of Ostwald. The Munsell system is much more flexible in my opinion. With the development of new, cleaner and stronger pigments, they can be added to the chroma steps in Munsell, but it seems that there has been no provision made for the addition of these in the Ostwald set-up as each triangle already contains the full number of rhomboids, 28 in each. The value scale of Munsell is the most helpful of its three dimensions, in my opinion, and the hue charts showing at what value each hue reaches its strongest chroma strength is a very important and helpful point in the study of color. They have established a gray scale in Ostwald but it does not have the significance it should because the 24 hues at their fullest intensity or purity all appear at same level.

I have seen Mr. Jacobson's "Color Harmony Manual" and it is very well done. The treatment of the gloss surface as well as the flat is very good. The even numbers of 24 triangles of 28 rhomboids each has made this job less complicated. There are still many desirable colors between these 24 triangles or hues not available, however. The 672 standard colors in this system is the largest single factor to recommend it, which is a lot of colors to have at your finger-tips, but the number of colors possible in Munsell is almost unlimited. The addition of the 20 third intermediate hues recently brings the number of standards around the 600 mark.

Of course, you have not given the same space to the explanation or illustration of Munsell that you have to Ostwald in your publication. But being quite familiar with both, I am able to express my opinion based on past experience with them. The fact that the Bureau of Standards has adopted Munsell and the American Standards Assn. has approved it is a fine recommendation.

The opinions expressed herein are of the writer and are not necessarily those of The Glidden Co. Very truly yours,
C. R. SMEDLEY, Color Engineer
The Glidden Co., Cleveland, Ohio

THE FLAG ON PACKAGES

SIRS: Your recent article, "Use of The Flag in Packaging," is most timely. Many printers and lithographers unknowingly misuse The Flag, U. S. Shield, and other government insignia in posters, box covers, and other pieces of printed matter, but they do this, from a feeling that every such use of The Flag helps to kindle that spirit of patriotism which has been so sadly lacking.

It is only an extreme case where a concern deliberately attempts to "enrich his pocket," to quote from your article, by the use of The Flag on his packages, in his literature, etc. When those who have violated the laws of any of the 48 states have their attention respectfully called to such offenses, they are only too glad to receive the correct information.

Two of the most common mistakes, although not legal violations, are the incorrect arrangement of the National Colors—Blue, White and Red. They might easily note the air mail boxes, W. P. A. signs, etc., which are painted from top down blue, white, and red. All government literature, various Flag Codes (except some of those of private groups) cite the colors that correct way.

Another case is that of reproducing the U. S. shield. During the last twenty years in but four cases have I noticed the Shield correctly reproduced. The Shield has only six red stripes—not seven, as in The Flag—and there should be no stars in the blue strip (chief) at the top. . . . Right truly yours,
GRIDLEY ADAMS, Chairman, National Flag Code Committee

A GENTLEMAN OF QUALITY

WHO KNOWS HOW TO FIGHT!

His "counter attacks" are famous. In the full dress of fine wood grain patterns enhanced through skilled Pilliod design, the Pilliod merchandising package has led many a prominent product through successful sales campaigns. ✻ But wood is too good a soldier not to be in the *biggest* battle — and winning the war comes FIRST. So Pilliod manufacturing facilities are, at present, largely devoted to Victory. ✻ If your product has a high priority rating, we'll help you with immediate packaging production. If you are looking ahead to peacetime merchandising, let us help you plan your packaging strategy.

THE PILLIOD CABINET COMPANY · SWANTON, OHIO

THE FINEST PACKAGES GROW ON TREES

Oil for—war

(*Continued from page 48*) about what might happen, but as long as they could get steel containers they weren't much interested in anything else. Now we are so busy handling war orders, we haven't the facilities to experiment nor the capacity to handle anything more." The users of containers for oil realize that this is exactly what happened, but they say, "until the present emergency was upon us, there was no reason to consider a switch from a satisfactory metal container to one that cost more and was not sufficiently developed for commercial application. The purely technical aspects of the situation bear this out." "We don't say it can't be done," say the paper experts, "but the problem is first to use fibreboard which has adequate structural strength to do the job and at the same time to impregnate or coat or line or laminate this board in a manner to resist the chemical contents of the oil." Paper pulp is strongest, say these authorities, when it is properly sized and rolled into sheets. Mixing weatherproof-, grease-, and acid-resisting dopes in the beaters with the sizings is not only expensive but technically impractical. It is better first to prepare the fibre by the best known methods for giving it strength—then to laminate the plies with protective compounds or to treat the finished board with special coatings. Such boards can be made into drums by the convolute or spiral method, but this means seams and the problem of adding a top and bottom piece, which must be rendered leakproof where they are joined. Then a flange or bung must be added so that the container can be filled and emptied.

A steel drum, on the other hand, can be drawn from one piece of sheet metal—or, if seamed, may be welded so that there is no chance for leakage. Certain plastic molders believe that paper pulp fibres mixed with certain dopes could be used as sheet or compounds from which a 55-gallon container, for example, could be drawn or molded. So far this has not been done commercially nor has such a container been made which has a better rate strength ratio than metal or bonded veneer. Other difficulties are the present problems of obtaining the right chemical compounds for such purposes as well as for dies and molds.

One paper technician told us he believed everybody was barking up the wrong tree on this problem—that everyone was trying to make a paper container that simulates a metal drum instead of designing a paper package for 55 gallons of oil in keeping with the essential characteristics and limitations of paper. "Pulp, by itself, is a weak material," he said. "It is made strong by the electro-chemical reaction between the sizings and the fibres and by proper processing in sheet form on modern paper-making machinery. Why not begin with outside construction in the form of a carton made from this material which everybody knows is strong and put the liquid products in a water- or oil-proof bag inside this container?" He was told about the fabric bag-in-carton developed for malt syrup by Standard Brands described in another part of this issue. "That sounds very promising," he said. "The bag confines the product. The two cartons protect the bag. At the same time, the inside bag reduces the stresses against the walls of the carton."

Plywood Drums—A plywood drum has been used for greases. The efficiency of this type of container is quite good but far from perfect. There is a tendency for the oil to seep through the veneer. Furthermore, try to get plywood for this purpose under present restrictions.

Paper Barrels—Another possibility is a barrel made with paper staves. Barrels of this type have been made experimentally. The staves are formed from paperboard, similar to the way they are formed of wood. The barrels are held together with metal hoops, but it is said that hoops can be made of paper materials also.

This whole problem of substitutes for steel drums of 55-gallon capacity and larger is taxing the smartest heads in the industry. It needs immediate attention. Some members of government agencies are of the opinion that a substitute for the steel drum is an easy matter and would push the use of anything to save steel, even for export. That would be disastrous and should not even be considered until such substitute containers can be made foolproof at home first. It is the responsibility of every supplier and user of such containers to prevent the wide-eyed visionaries from promoting the use of a container that might seriously hamper the war program. The supply of petroleum products to the armed forces is too serious a matter to risk failure because of a faulty or inefficient container.

Credit: Photos—coated wooden barrels, Milltown Cooperage Co., Inc.; plywood drums by Seymour & Peck Co.; fibre drums, Container Corp. of America; atmosphere shots, Socony-Vacuum Oil Co., Inc., and official OWI photos by Palmer and Perlitch.

Laminations

(*Continued from page 53*) a package fabricated for condensed milk. This, it is claimed, will be hot packed and sterilized by a lamp. Vacuum will be drawn by the nitrogen method.

Sheetings of laminated glassine are stepping forward to assume jobs both in the military field as well as the civilian. In some of the army ration packages will be found little packages of salted nuts. These are made of double-wall cellophane, sealed with a crimp and a wax adhesive, or with a folded seal.

Paper packages in laminated form are by no means restricted for the use of smaller units. Containers of 30- to 60-lb. capacity for such materials as frozen eggs can be conveniently and safely carried in a wax carton which is provided with a double wall bag of cellulose sheeting. Strictly speaking, this may not be considered a lamination because the two sheets of cellulose are laminated only where the long seam and the seals appear. Shippers testify that this type of package with a loose bag inside is functioning adequately. Similar in structure is the now familiar package used extensively for frozen meats.

Soup mixes are making demands for different types of lamination. The Dry-Pack brand comes in a double-wall, laminated glassine bag in a carton. This bag has a thermoplastic band at its top for sealing. Another brand—Tasty American—is content to do without the carton, but its envelope is made of two sheets of heavy glassine laminated together and the bag has an inner coating of non-toxic thermoplastic which provides the heat-seal. This form of package appears to be solving the problem created by the disappearance of metal foil and rubber hydrochloride sheeting. True, some of these packages are still obtainable on the market, but it won't be long now before they have disappeared.

The laminated package is an old stand-by for the use of potato chips, now more important than ever. Standard construction is of double glassine lamination which is waxed inside and out, after printing. The seal is a simple fold with a metal staple. The service record of this type of package

THIS DRUM CARRIES OIL

SO THEY CAN "CARRY ON"!

Their exact destination is a military secret . . . but thousands of these *five imperial gallon containers* filled with high-grade lubricating oil are being shipped to the far-flung battlefronts of the United Nations' forces.

They're sturdy containers . . . designed to meet Government's rigid specifications . . . built by Crown to stand up under the rough handling they are bound to receive on their way to as well as on the battlefields.

And because of their durability and the convenient bail, these Crown containers are used again and again . . . often for the transport of other liquids after serving their original purpose.

Just one more example of how Crown Can is doing its part to speed the war effort!

CROWN CAN COMPANY, PHILADELPHIA, PA.,
Division of Crown Cork and Seal Company,
Baltimore, New York, St. Louis, Houston, Madison, Orlando, Fort Wayne, Nebraska City

★ ★ ★ ★ ★

CROWN CAN

CLOSING SOON!

Entries still Being taken in First Wartime Package Competition

12th ALL-AMERICA

(see opposite page for details)

DEADLINE FOR ENTRIES IN 12th ALL-AMERICA PACKAGE COMPETITION APPROACHING

Midnight, the 4th of January, 1943, will be the final and ultimate deadline for accepting entries in the 12th annual All-America Package Competition.

As the first to be held in wartime, this year's All-America has drawn enthusiastic cooperation from the ranks of all packagers in all industries. Foods, cosmetics, drugs, tobacco . . . . the list is endless. All of the new packages and displays, the converted containers, the stock packages, the simplified and the standardized, the waste-eliminated containers from every field are being entered in this competition.

The enthusiasm of industry will be more than matched by the interest of the consumer. This year, we confidently predict, the All-America Package Competition will hit a new high of public prestige and esteem which will reflect on every entrant and entry.

The All-America asks that all prospective entrants send their entries now—avoid the Christmas mailing rush—help alleviate the manpower bottleneck by spreading the work out evenly—send *your* entries in today!

Entry blanks will be sent on request—no charge, no fee, for making as many entries as you wish.

The 12th ALL-AMERICA PACKAGE COMPETITION

122 East 42nd Street NEW YORK CITY

and its ability to preserve the crispness and flavor of a hygroscopic food is warrant for its use by other products. With slight modifications, the same principle is being applied successfully to package tobacco products, vitamin preparations, and the like, where moisture must be kept in and/or out.

Of primary importance, in the use of these ultimate materials for packaging, is the final seal. As with every other material, no package is stronger than its seal. The makers of thermoplastic heat-sealing coatings may experiment, produce and test until they are black in the face—if the sealing fold is not properly fabricated the most efficient thermoplastic in the world will be of no value whatever. Obviously, you can't seal through a gusset or a lap unless the thermoplastic coating is thick enough to take care of the differential. These new types of packages are making new demands on the operatives in packaging departments. They must learn new techniques and new operations, based on the properties of the materials with which they are now working. Often enough, existing equipment must be adapted to the new materials and even in some instances temporarily abandoned to give way to hand labor. Frequently speeds are, perforce, cut down because of these changes in materials, operations and equipment, but that unhappily is one of the consequences of the war.

This whole picture is one of adaptation to war shortages. The final decision, in the selection of material and the form of the alternate package, must be made by the packer himself. The makers of raw materials are ready and willing to help as also are the converters, but they cannot carry the entire burden. The packer must make his own tests, select materials and devise packages for his own products, then train his organization to handle the new materials as efficiently as possible in these bewildering days.

How to save rubber

(Continued from page 111) remove greasy accumulations. Fire hazards may be lessened by mixing 60 per cent carbon tetrachloride with 40 per cent high test plain gasoline (must not contain lead tetra ethyl). Also recommended is a mixture of equal parts by volume of ethyl (grain) alcohol and carbon tetrachloride. This mixture is safe in the presence of static electricity and temperatures up to 120° F.

The ideal arrangement is to load material from chutes moving in the same direction and as nearly as possible at the same speed as the belt. When this ideal cannot be attained unless entirely new belt systems are built, now practically an impossibility—wear can be reduced considerably by such devices as the following:

1. Rubber-covered pulleys at loading point.
2. Shock impact mounting to cushion the load. These are made of rubber bonded to metal and can be adapted to any installation.
3. Pneumatic-tire-type idler.
4. A set of baffle bars, carefully placed to break the impact of the load before it falls on the belt.
5. Notched chute which can be designed to allow fines to form a cushion under the load.

Additional wear on belts can be prevented by vulcanized splices in place of metal fasteners, which are also difficult to get these days. Such splicing can be made by means of portable vulcanizing equipment, operated with electric current. If your plant does not have one of these vulcanizers available, your supplier of rubber belting can probably bring a vulcanizer to your plant to do this job for you when needed.

Careful records should be kept of the size, type and performance of each belt in the plant. One person on the maintenance staff should be appointed to keep such records and make recommendations for repairs.

Many years of life can be added to belts by prompt repairing of chafed spots, gouges and snags in the covers and edges. The most thorough and satisfactory method of repairing belts is with the aid of an electric vulcanizer. Full directions may be obtained from your supplier. Damaged plies are cut away down to the good plies. Rubberized repair fabric is cemented in and the patch vulcanized by the same method as that developed for vulcanized splicing with portable equipment. This can be done on your own premises.

However, if vulcanizing equipment is not available, the operator should not permit injuries to be neglected. Temporary repairs can be made easily. This may be done by cutting the cover where loose, adding a self-vulcanizing cement to the damaged place and fitting in a patch of repair gum. These repairs are temporary, but they stop further damage until vulcanized repairs can be made.

These foregoing suggestions on the care and repair of rubber are only a brief résumé of what can be done to save valuable rubber, when every ounce is needed. Detailed information may be secured from your supplier. He is more than anxious to help you "make it last" and the conservation programs conducted by rubber manufacturers are an outstanding contribution to the war effort.

Credit: Acknowledgment to The B. F. Goodrich Co. for the information and photographs for this article.

Salt lines begin

(Continued from page 115) it is the salt used to make butter and cheese and other dairy products, as well as industrial merchandise. Three large open tanks 100 ft. long by 16 ft. wide at Jefferson Island Salt Co. produce this salt. Inside the tanks are steam pipes running the whole length of the tank through which live steam is passed. The "grainer salt pans" keep brine at a heat point just below boiling, so that evaporation takes place at the surface of the brine, and the salt crystals float here for a few minutes after forming. These crystals are not the small cubes with which every housewife is familiar, but hollow inverted pyramids or flat flakes somewhat resembling a snowflake.

As these grow on top of the brine, they become heavier and eventually sink to the bottom of the tank. Here large mechanical rakes slowly push the salt to one end of the tank and out into a storage tank full of brine. From the storage tank, the salt is fed over another large rotary vacuum filter drier. The dried salt is then screened on its own series of screens and separated into several different sizes demanded by consumers. Flake salt is not packaged in small containers, but is filled into multi-wall paper bags by a movable filling machine or into cotton sacks. With these packaging lines, the mine can produce 1,250 tons of salt in 8 hours.

Credit: Filling, wrapping, sealing and labeling machines for rock table salt by Stokes & Smith Co. Machines for packaging evaporated vacuum pan salt by Battle Creek Bread Wrapping Machine Co. Filling machines for flake salt by Bates Valve Bag Co. and Richardson Scale Mfg. Co. Bag stitcher by Union Special Machine Co.

Automatically
PRODUCED SET-UP BOXES
for ECONOMICAL, STURDY PACKAGING

★ Set-up boxes are known for their strength and their quality appeal. Produced automatically, they offer real economy and speedy production necessary for modern mass marketing.

We produce all types of automatic strip and blanket-top boxes from the smallest size in all the new protective coated and laminated boards: moistureproof, greaseproof, oilproof, etc.

These containers can be adapted to hundreds of different products. They are especially adaptable for replacement purposes.

IMPERIAL PAPER BOX CORP.
252 NEWPORT ST. BROOKLYN, NY.

You need
NEW ADHESIVES *for your* SUBSTITUTE MATERIALS

Union Paste has developed a number of new adhesive formulas to perform new gluing jobs with the substitute materials packagers are now using or planning to use.

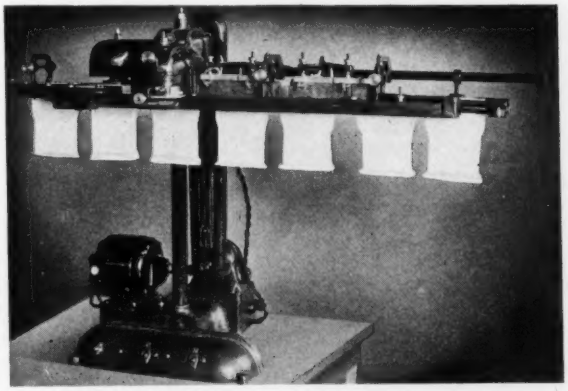
We have developed these formulas in *available* adhesive materials, replacing essential chemicals with those not vital to the war effort.

Our laboratory facilities are always open to packagers who are converting their efforts in line with Victory production. We have developed special adhesives for such purposes and will be glad to work with you on your problem.

Established 1866
Union Paste Company
1605 HYDE PARK AVENUE • HYDE PARK, MASS.

We Are Proud
OF THE PRODUCTION DIRECTED TOWARD WINNING THE WAR MAINTAINED BY AMSCO HI SPEED SEALERS

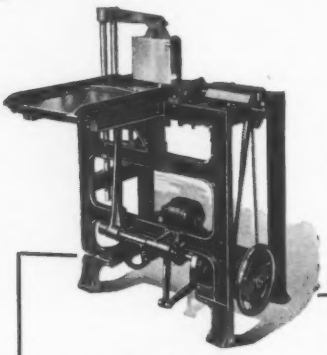
in the packaging of
Ammunition • Rations C, I, K, and components
Sulfanilamide • Dehydrated Vegetables and Soups
Surgical Dressings • Dried & Frozen Foods



If you have problems in packaging for the war effort, consult us.
Our efforts are devoted entirely to help Win the War!

AMSCO PACKAGING MACHINERY, INC.
31-31 Forty-Eighth Ave., Long Island City, N. Y.

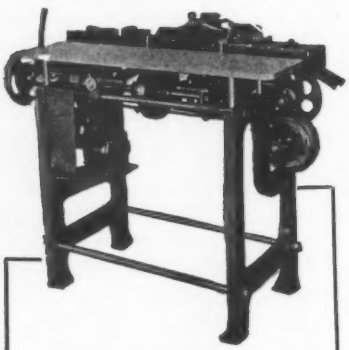
Machines to Package Food Products for the Armed Forces



This PETERS JUNIOR CARTON FORMING and LINING MACHINE sets up 35-40 cartons per minute, requiring one operator. After the cartons are set up, they drop onto the conveyor belt where they are carried to be filled. Can be made adjustable for several carton sizes.

Today production is paramount and today these Peters Machines are being used to package lard, shortening, biscuits, crackers and other food products for our men in Service.

With the proper priority we can equip your plant to speed up production and lower your cost.

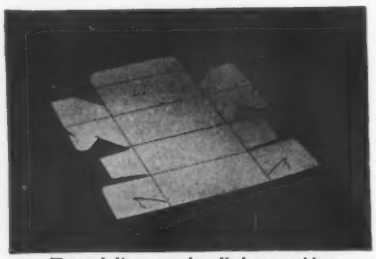


This PETERS JUNIOR CARTON FOLDING AND CLOSING MACHINE automatically closes 35-40 cartons per minute, requiring no operator. After the cartons are filled, they enter this machine on conveyor belt as open cartons and leave the machine completely closed. Can be made adjustable for several carton sizes.

Send us a sample of each size carton you desire to handle and we will promptly recommend and quote on machines to meet your specific requirements.

Advice to Present Users

Inspect your machines regularly and keep them operating at maximum efficiency. Periodic oiling is good insurance for best operation. If any new parts are required to keep these machines running, do not hesitate to communicate with us.



Type of die carton handled on machines

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

Internal tearing—paper

(Continued from page 120)

Procedure

Make the test in an atmosphere conditioned according to TAPPI Standard T 402 m.

Level and adjust the instrument, if necessary, before each set of tests.

Place the specimen for test midway in the clamps with its upper edge parallel to the top of the jaws. The initial slit shall be at right angles to the top of the jaws. Make alternate tests with the wire sides of the sheets comprising the test specimen facing opposite directions. The test shall be made on enough sheets so that when torn together, the scale readings are between 20 and 60 and the number of sheets so used shall be recorded (1 to 16 sheets may be used). Not less than five tests in each principal direction of the paper shall be made.

If the mean value of the lowest and the highest reading differs from the average of all the readings by over 10 per cent, test more specimens until there is agreement within these limits. Discard an isolated very high or low result which is not repeated in duplicate when a consistent average has been obtained without the abnormal reading.

For accurate results reject readings obtained where the tear deviates more than 10 mm. ($^3/_8$ in.) away from the line of the initial slit. When it is necessary to include such readings, a notation should be made and the deviation given.

If the side of the specimen above the movable clamp rubs against the sector as a tear is made, reject that reading.

Report

Report the results as the force in grams required to tear a single sheet. Since the scale readings are made $^1/_{16}$ of the actual values, this is calculated by multiplying the average instrument reading (corrected if necessary for calibration error) by 16 and dividing by the number of sheets torn at one time. Record the results as follows:

Result	*Report to nearest*
Below 10 units	0.1
10 to 19.9	0.2
20 to 49.9	0.5
50 and above	1

The average, maximum and minimum results shall be reported for both principal directions of the paper and also the number of sheets torn at one time. Report results obtained on strips torn in the machine direction as internal tearing resistance, machine direction, and report results obtained on strips torn across the machine direction as internal tearing resistance, cross direction.

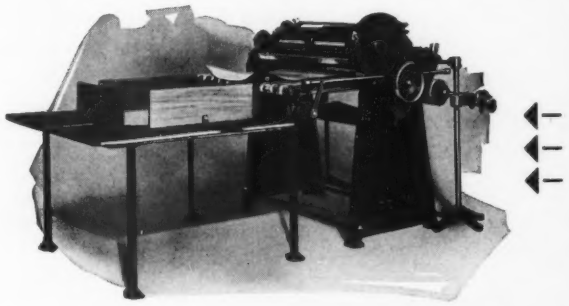
Precision

Duplicate determinations on different sets of samples from the same shipment and on different testing instruments should agree with each other within 7 per cent.

NOTES

1. The method described gives the average force in grams to tear a sheet by measuring the work done in tearing a number of sheets together through a fixed distance. The scale indicates the ratio of the work done (in gram-centimeters) in tearing the specimen to the total tearing length of 16 sheets. This total tearing length is 16 (sheets) × 4.3 cm. (tearing

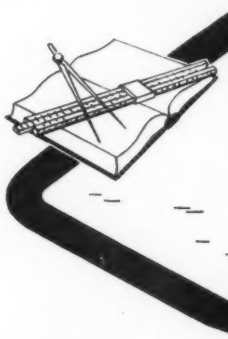
In These Trying Days of "SHORTAGE of HANDS"



The Beck Sheeter

will release hands for other work, because thru its great simplicity, it needs very little of the operators' attention, once it is set. Especially when equipped with **ELECTRIC EYE CONTROL** are you freed from human element in your sheeting work. Amazing degrees of accuracy in "spot sheeting" work, plus profitably increased outputs. The need for doing your own sheeting is probably more acute now than ever before in your business history, and this because of present conditions.

CHARLES BECK MACHINE CO.
13th & Callowhill Streets Philadelphia, Pa.



Problem Solving is our BUSINESS

With the insistent need for substitutions of non-critical for critical materials, and with new problems presented for solution almost daily, Mid-States Gummed Paper Company is expending every effort in devising such substitutes.

At Mid-States men and machines are developing such new materials as waterproof tapes, substitutes for wire and steel strapping, luminous paper, heat sealing products and special coatings for paper and cloth.

Mid-States Gummed Paper Company with their years of experience and background in working with special types of adhesives, coatings, paper, cloth and other materials, is proving an invaluable aid to many businesses these days. Manufacturers and jobbers are invited to consult with us. "Problem Solving is our Business."

MID-STATES GUMMED PAPER CO.
2515 SOUTH DAMEN AVENUE
CHICAGO, ILLINOIS

PACKAGE YOUR PRODUCT IN A "SHOW-CASE" ALL ITS OWN

MERCHANDISE WITH LUSTEROID

For your future packaging requirements, it will pay you to lay your plans around LUSTEROID vials and tubes.

These ultra-modern plastic containers combine complete protection with full visibility in a light-weight package ideal for display.

In short, LUSTEROID gives you safety, smartness, savings and sales. Saves work, too. No protective partitioning or special packing required. No labels to affix—the design and sales message are reproduced in color as an integral part of the container.

LUSTEROID vials and tubes are made in all colors, transparent or opaque, with cork, slip-on or screw-cap closures, in standard diameters from ¼" to 1¼" and lengths up to 6".

Write for full details

LUSTEROID
CONTAINER CO., Inc.

Formerly Lusteroid Division of the Sillcocks-Miller Company

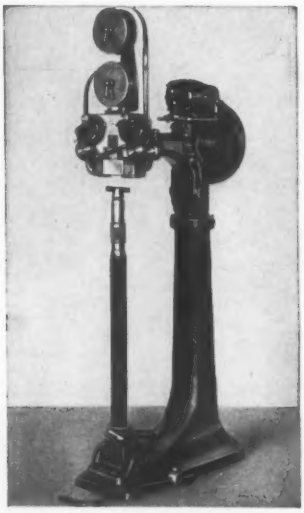
10 Parker Ave., W. South Orange, New Jersey

• LUSTEROID • LUSTEROID • LUSTEROID •

The BLISS DUPLEX BOTTOM STITCHER

Gives You

MORE BOXES PER HOUR



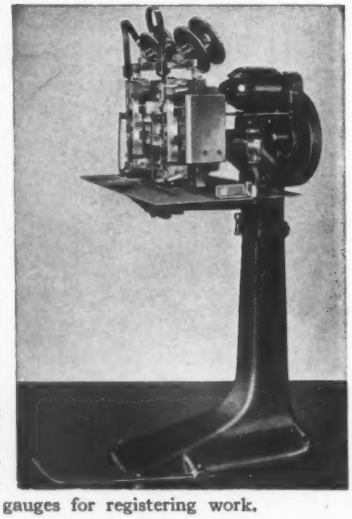
This Bliss Duplex Bottom Stitcher drives two stitches at each operation, 2½" apart; gives you MORE CONTAINERES PER HOUR—lowers the cost of bottom stitching.

This machine is popular in plants using large quantities of containers for shipping canned goods, bottled goods and other food products, shoes, tissue paper, soap and many other kinds of materials produced in quantity.

Equipped with the Bliss Duplex Stitcher Head. Uses the same range of wires as the Single Bliss Heavy Duty Stitcher Head.

THE BOSTON MULTIPLE HEAD BOX STITCHER

Drives two or three stitches at each operation. Heads are adjustable sidewise. Valuable for stitching suit boxes, cartons and other types of set-up boxes, and for any other stitching requiring two or three stitches evenly spaced.



Its economy on many kinds of work is obvious—higher production at no increase in labor cost.

Drives all sizes of ribbon and hybar wire. Uses ½" Crown stitch, with minimum spacing of 3" from center to center. Table is equipped with adjustable back and side gauges for registering work.

ASK FOR LITERATURE ON THESE MACHINES

DEXTER FOLDER COMPANY

330 West 42nd St., New York

Chicago, 117 W. Harrison St.
Boston, 185 Summer St.
Philadelphia, 5th & Chestnut Sts.
Cincinnati, 3441 St. John's Place

length per sheet) × 2 = 137.6 cm., the factor 2 being included because in order to tear a sheet through a given distance, the tearing force has to be applied through twice that distance.

2. Perforating the specimens with a hole so that its edge is 4.3 cm. from their edges and cutting or tearing with the fingers the other side of specimens to the hole before inserting them in the instrument, gives the same results as with using the knife and is to be preferred for accurate work if a suitable punch with jaw 4.3 cm. deep from the inside edge of the plunger is available.

3. The work done in tearing a number of sheets of paper includes a certain amount of work to continuously bend the paper as it is torn, to provide for the rubbing of the torn edges of the specimen together and to lift the sample of paper. Consequently, it is necessary to specify definite empirical requirements for both the apparatus and method to keep the additional work not used for tearing to approximately a definite quantity. With jaws arranged so that after slitting the clamped edges are at right angles with one of the edges pointing away from the tearing direction, the readings may be very slightly increased, whereas if one of the edges is clamped at right angles so as to point towards the tearing direction, the readings may be slightly (up to 5 per cent) decreased from the standard. The influence of the number of specimens torn at one time and also their size often appreciably affects the total work done, consequently for accurate work the specification should be followed as closely as possible.

4. As described by Carson and Snyder (*see* reference), the capacity of the Thwing-Elmendorf tearing tester may be doubled by attaching to the pendulum in a suitable manner an auxiliary weight of about 2,500 grams and recalibrating.

References

Elmendorf, *Paper 26*, folio, p. 302 (April 21, 1920).
Houston, *Paper Trade J. 75*, no. 10:43 (March 9, 1922).
Marx, *Proc. Tech. Section, Paper Makers' Assoc. Gt. Britain, Ireland 4* (March 1924).
Carson and Snyder, *Paper Trade J. 86*, no. 13:57 (March 29, 1928).
Clark, *Tech. Assoc. Papers 15*, 262 (1932).

Credit: Reprinted from Paper Trade Journal, June 18, 1942.

Display—merchandise

(***Continued from page 101***)

to prove itself. In this emergency it can prove that it has elements of value possessed by no other merchandising medium and that it can be fitted and adapted to the demands of a period such as we are going through. Or it can watch itself decline in volume and in estimation of potential users until it comes to be regarded as a good tool in normal, untroubled times but of little use or value when unusual and abnormal emergency conditions arise.

In order, not only to survive this emergency but to take advantage of the situation to establish itself more firmly than ever, it would seem that point of purchase advertising must look to its own industry for exercise of ingenuity and study in producing answers to many questions having to do, for example, with display for unavailable merchandise, materials used in display manufacture, transportation, distribution, installation in outlets, acceptable types and new, hitherto unthought-of uses that will demonstrate display's wide value.

the CONSOLIDATED POWDER FILLER

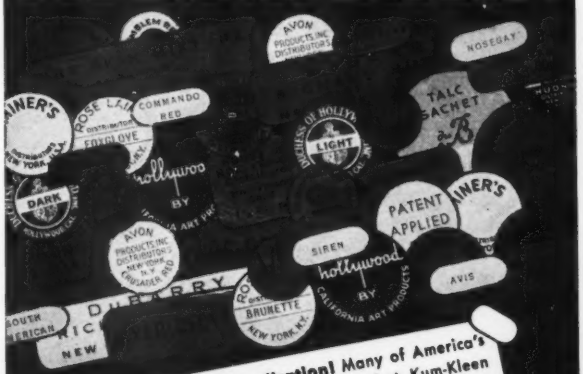
A modern, high speed Powder Filler designed for production packaging of spices, powdered and pulverized foods, drugs and insecticides.

Handles any fine, non-free-flowing material. Screw auger carries and measures materials. Vibrates container during filling to settle material. Takes containers from 1 to 40 oz. capacity. Filling capacity is 50 2-oz. or 20 16-oz. containers per minute. Full push button control.

Write for information

CONSOLIDATED
PACKAGING MACHINERY CORP.
1400 WEST AVENUE BUFFALO, N. Y.

USE SMALL LABELS?



Slash the cost of application! Many of America's leading manufacturers have found that Kum-Kleen Labels more than pay for themselves in application savings alone, for you simply press on—no fuss—no muss—no water—no waste. **Adhere to any smooth surface** including glass, wood, plastic, cellophane, metal, varnished paper and cardboard. **Never pop off** like water gum labels—they have proved themselves even under intensive heat, cold and climatic changes. **Write for samples today.** Get the complete story of dry labeling—learn how hundreds of manufacturers have profited with Avery Labels.

Kum-Kleen **LABELS**

AVERY ADHESIVES. DEPT. MP12. 451 E. 3RD ST., LOS ANGELES, CALIF.

• AMERICA'S *ONLY* GLASSINE SPECIALISTS •

For the "nearest thing to Cellophane"

Re-package in GLASSINE!

Transparent, to any degree desired . . . Clear, crisp, sparkling beauty that enhances any product . . . Tough and strong . . . Grease-proof . . . Moisture-vapor resistant . . . In opaque types, light resistant . . . These are just some of the properties of the variety of glassine papers available for all purposes, from packaging an industrial gear to wrapping a bundle of toothpicks.

For example—

HAVE YOU SEEN

our "Cellosheen" glassine? It has the lustrous appeal of Cellophane and is the *most transparent* glassine available anywhere.

Use it, and you will sacrifice none of the potent selling-power that visibility of the contents gives to your package! ASK US about this, or any glassine packaging. We can supply sheets or finished, printed packages at advantageous prices . . . Are especially equipped to work with you in developing your "perfect package." (No obligation, of course.)

Packaging Division
E. W. TWITCHELL Inc.
Public Ledger Building, • Philadelphia, Pa.
Specialist in Special Purpose Paper Packagings

IF you want to go "Over the Top" in sales, switch to Mac Sim Bar, the quality boxboard. Mac Sim Bar means the best.

★ ★ ★ ★

We do not make boxes, cartons or containers but we *do* make quality boxboard.

MAC SIM BAR Paper Company

OTSEGO, MICHIGAN
PHONE KALAMAZOO 5500

CHICAGO, 228 N. LaSALLE
PHONE CENTRAL 1798

Syrup in glass

(*Continued from page 64*) features such as the wide-mouth, the bail and decorative molding.

Wheeler-Barnes Co., Minneapolis, Minn., is among the growing list of syrup packers who are using glass. This company is putting up syrup in glass jugs and bottles in $1^1/_2$-lb., 5-lb. and 10-lb. sizes. An advantage of the new jug used, the company points out, is that the cap may be easily turned off by hand whereas the friction lid of the can formerly used required a pry-off tool. Pouring from the jug is also easier and is a cleaner operation than pouring from the can as dripping is avoided.

Another packer of molasses who has recently changed from metal cans to bottles is the Oelerich & Berry Co. of New Orleans, La., and Chicago. They have found ease of access to contents an advantage of the glass container and that it pours freely without dripping of contents over the outside. The metal can they had used before required an opener and once opened it became necessary to leave unused contents exposed to the air or to transfer the molasses to another container which could be sealed. The bottle which has a continuous thread cap provides an air-tight and leak-proof seal until the contents have been consumed and housewives find this of great advantage.

J. Stromeyer Co., Philadelphia, discovered their glass package had extra sales appeal when they began putting up their Turkey Brand Golden Table Syrup in jars. The contents are visible at all times and housewives found that they always knew when to replenish their supply. Stromeyer uses for their table syrup a $13^1/_2$-oz. economy jar which is particularly saving of critical materials.

Makers of glass are issuing a number of booklets, leaflets and other information to storekeepers telling them how to get the best out of their glass packaged goods. Instructions about the handling of the glass, which is different in many respects from that of tin, is given and advice about the building of store and other displays which will allow the visibility of the jars to be used to best advantage. Syrup manufacturers have not been slow to realize on the many sales appeal points of their products in glass. Shelves and windows now often have effective arrangements of molasses and syrups which draw attention of the housewife to these timely products and encourage her to buy them.

Credit: Glass containers and closures by Anchor Hocking Glass Corp.

"Pillow" in a carton

(*Continued from page 57*) fibreboard would have to be considered. The packages are made to withstand 30-lb. weight. They will not stand the strain of 60 lbs., the weight of the contents of the previously used steel pails. However, this has proved to be a decided merchandising advantage because many bakers will buy the smaller unit, who cannot use the larger one.

Credit: Weatherproof coating for fabric, Gordon-Lacey Chemical Products Co. Wrapping Machine, Ivers-Lee Co. Cartons, Star Corrugated Box Co., Inc.

SPECIALISTS IN SMALL PAPER BOXES

RPBCo

Time Tested...

Grease Impervious Paper Boxes for those who use small metal and glass containers for packing Petrolatum and other greasy substances—

write for samples...

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RICHMOND, VIRGINIA

SPECIALISTS IN SMALL PAPER BOXES

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NUMBER ONE LABELING JOB

The builders of WORLD Labelers are on the job twenty-four hours a day, producing equipment to help plaster defeat on our enemies and make it stick.

Until that job is finished we shall be unable to provide the range of services to WORLD Labeler users in which we have taken so much pride for so many years.

WORLD Labeler service facilities will be maintained to the best of our ability in order that your Labelers may continue to do their best work for you however long and hard they may be used.

For information and assistance on Labeler operation and adaptation to the needs of the day, do not fail to get in touch with WORLD labeling headquarters. Our booklet "Liberty and Labeling" contains practical information on Labeler care and maintenance. May we mail you a copy?

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WORCESTER • MASSACHUSETTS

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THESE are days when labor-saving, cost-reducing, production-boosting packaging equipment is vital to the war effort and to your own survival.

Price limitations, rising costs, labor and container shortages plus demands for increased production make the going tough.

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Write today for complete recommendation on machines to handle your job. Deliveries on A-1-J or better ratings.

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BRANCHES IN PRINCIPAL CITIES

AROUND THE CLOCK FOR THE ARMY AND THE NAVY

Seven days a week—Twenty-four Hours each day, the men and machines which formerly built paper converting equipment are now engaged in producing for defense.

Our own production has been set aside until our national needs are satisfied. Some of the machines you have ordered may be among the pieces of equipment which this program will affect.

We regret that we must hold their delivery until we are again permitted to return to production for civilian needs.

In the meantime we will be glad to serve you with repairs to machines you now have, where such orders are accompanied by proper priorities.

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MACHINE CO • GREEN BAY • WIS

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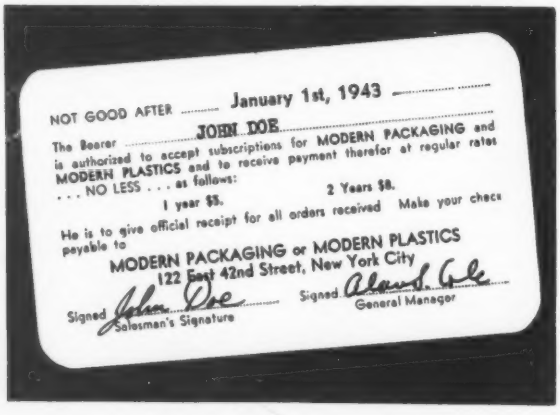
Pay your subscription agent only if he has our *Authorization Card* dated *January 1, 1943.*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Salesman's Signature
Signed Adam S. Cole
General Manager

Make checks payable to

MODERN PACKAGING

Chanin Building, 122 E. 42nd St., New York, N. Y.

High-speed sealing

(*Continued from page 118*) but the important point is that definite, measurable progress has been made.

Mechanical forces, as well as chemical, have been brought to bear on the solution to this problem. Consider the four illustrations on these pages. The first drawing is a standard cold glue pot for automatic case sealing machines—the receptacle for the glue we are striving to develop—the versatile 60-second setting, wholly waterproof cold glue toward which all our work is pointed. The next drawing is of a regular jacketed hot glue pot for maintaining even-above-room-temperatures to speed the setting of slower adhesives than otherwise could be considered for fast machine work. The third illustration shows a special-divided, thermostatically controlled, glue pot assembly which provides tremendous latitude in adhesive selection. By means of this device, two different glues (one to hold the flaps down quickly and the other to give a waterproof bond) may be applied to each flap (see Fig. 3.) Thus, any hot or cold adhesive that dries waterproof—no matter how slowly—can be efficiently used in conjunction with a non-waterproof, quick-setting hot glue to seal tough "waterproof" cases at the maximum production speeds.

The special assembly can be made a part of certain standard equipment shown in the photo. This requires only the addition of the double-compartment glue pot to apply simultaneously the two types of sealing compounds used—one quick-setting to hold the flaps down—the other which may or may not be quick-setting to provide the waterproof bond.

Naturally, in hand-sealing operations, where cases are stacked with weights on the uppermost, speed is not a factor and several meritorious products for brush work are already on the market. However, before more stringent "waterproof" specifications can be written, it must be established that grades will be readily available for both hand and machine sealing that could be produced in tonnages proportionate to the need and with the present manufacturing facilities of the adhesives industry.

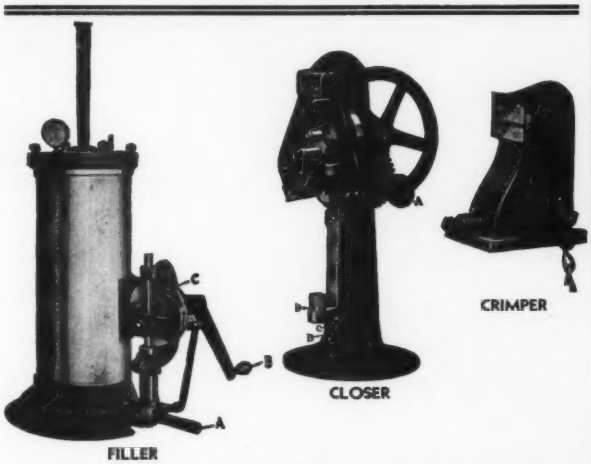
Credit: Special glue pot assembly developed in collaboration with Standard-Knapp Corp.

Tailored for shoe polish

(*Continued from page 59*) in shoe care. The "Skuf Shine" is a dye as well as a polish and colors the scuffed part of the youngster's shoes. A white polish has a deodorant quality which parents of the very young child will appreciate, because use of the polish does away with any disagreeable odors the shoes may have acquired. A blue and white carton for the product has a pictorial of a baby's head.

Hollywood polishes and liquids do not have a family pattern for the different cartons and containers. However, the polishes for children's shoes are designed with the same type of active, freely drawn figures which give the containers a distinctive quality. Labels and containers for adult shoe polishes have adhered to unusual lettering and color for brand emphasis.

Credit: Cartons, labels and shoemaker display dispenser, Brooks & Porter, Inc. Jars, Hazel-Atlas Glass Co. Bottles, Swindell Bros. Closures, Ferdinand Gutmann & Co. and American Cork Specialties Co., Inc. Inner seals for jars, Ferdinand Gutmann & Co.



COLTON Hand Operated Machines

Will seal tubes with Colton Clipless Closure or for applying clips
Will be pleased to recommend machines suited for your requirements

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All classified advertisements payable in advance of publication. Rates: $5.00 up to sixty words; enclosed in border, $10.00 per inch. Publisher reserves the right to accept, reject or censor all classified copy.

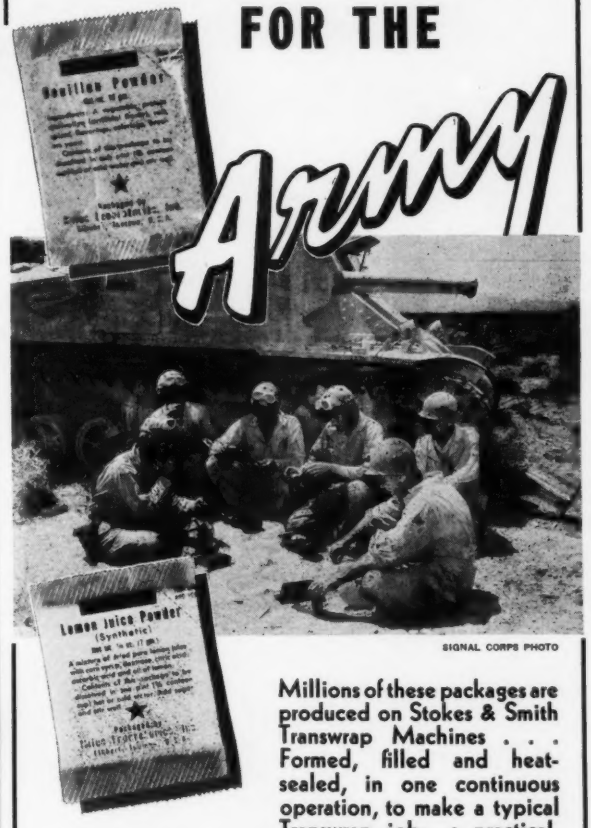
WANTED: Production Superintendent now employed, to take charge of Converting Plant. Splendid opportunity. Seek man who has creative ability and practical experience in converting machinery such as laminating, sheet lining, coating, die cutting, etc. Modern, long established Western New York plant now engaged in war work, but position offered is permanent. Give age and qualifications. Correspondence strictly confidential. Reply Box 165, Modern Packaging.

WANTED: One used "Staude General" gluing machine. Advise age, price and general mechanical condition. Reply Box 164, Modern Packaging.

Advertisements in this section are restricted to those of a helpful nature. *Positions Wanted; Help Wanted; Lines Wanted; are typical categories.*

Classified Advertising Department
MODERN PACKAGING MAGAZINE
122 East 42nd Street **New York City**

PACKAGING MILLIONS OF RATION "K" UNITS FOR THE ARMY

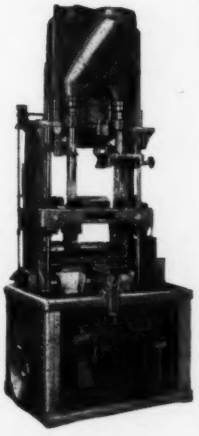


SIGNAL CORPS PHOTO

Millions of these packages are produced on Stokes & Smith Transwrap Machines . . . Formed, filled and heat-sealed, in one continuous operation, to make a typical Transwrap job: a practical, low-cost package which fully protects the contents; seals-in freshness and flavor; requires minimum material, time and labor to produce!

S&S

TRANSWRAP MACHINE



Using Cellophane, or other heat sealing films from the roll, the TRANSWRAP, like many other S & S machines, is easily convertible to varying needs for type, feed and size of package. If you need help in converting any S & S machine, or need new machines for war-essential uses, get in touch with S & S.

A product of

STOKES & SMITH COMPANY

FRANKFORD, PHILADELPHIA, U. S. A.

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MODERN PACKAGING
BRESKIN PUBLISHING CORPORATION
122 East 42nd St. **New York City**

WORRIED ABOUT A REPLACEMENT PACKAGE?

If you are faced with the problem of replacing your present package, Michigan Cartons may be the answer. Many packers have already switched to these sturdy sales packages without sacrificing protection or product appeal. Here are a few facts . . . straight and to the point . . . but well worth remembering.

Michigan Cartons can be coated, laminated or combined with a variety of moisture resistant, greaseproof and gas repellent materials. They're built to snap through high speed packaging machines at a low unit cost. They pack snugly, save costly freight space and weight. Package designs can be easily transferred to Michigan Cartons without loss of trade identification or sales appeal. More often the clean, flat surface of boxboard prints brighter, sharper . . . actually improves package design.

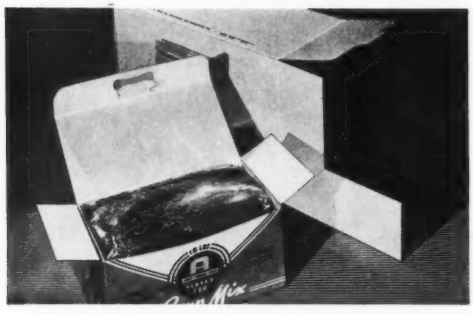
Every Michigan Carton is tailor-made. No stock sizes or designs are available. This means that each product is carefully studied and, by heeding its specific requirements, the best package possible is constructed.

If you have a replacement problem, write us. If we have the answer you'll get it immediately. If not, we will dig until we solve it.

MICHIGAN CARTON CO.

BATTLE CREEK, MICHIGAN

Manufacturers of Boxboard · Folding Cartons



Large Michigan Cartons like these are ideal for bulk packaging. Coated, laminated or combined with moisture, grease-resistant materials this type of package is being used to protect frozen and dehydrated foods. Large cartons are sturdy—save weight and critical materials.

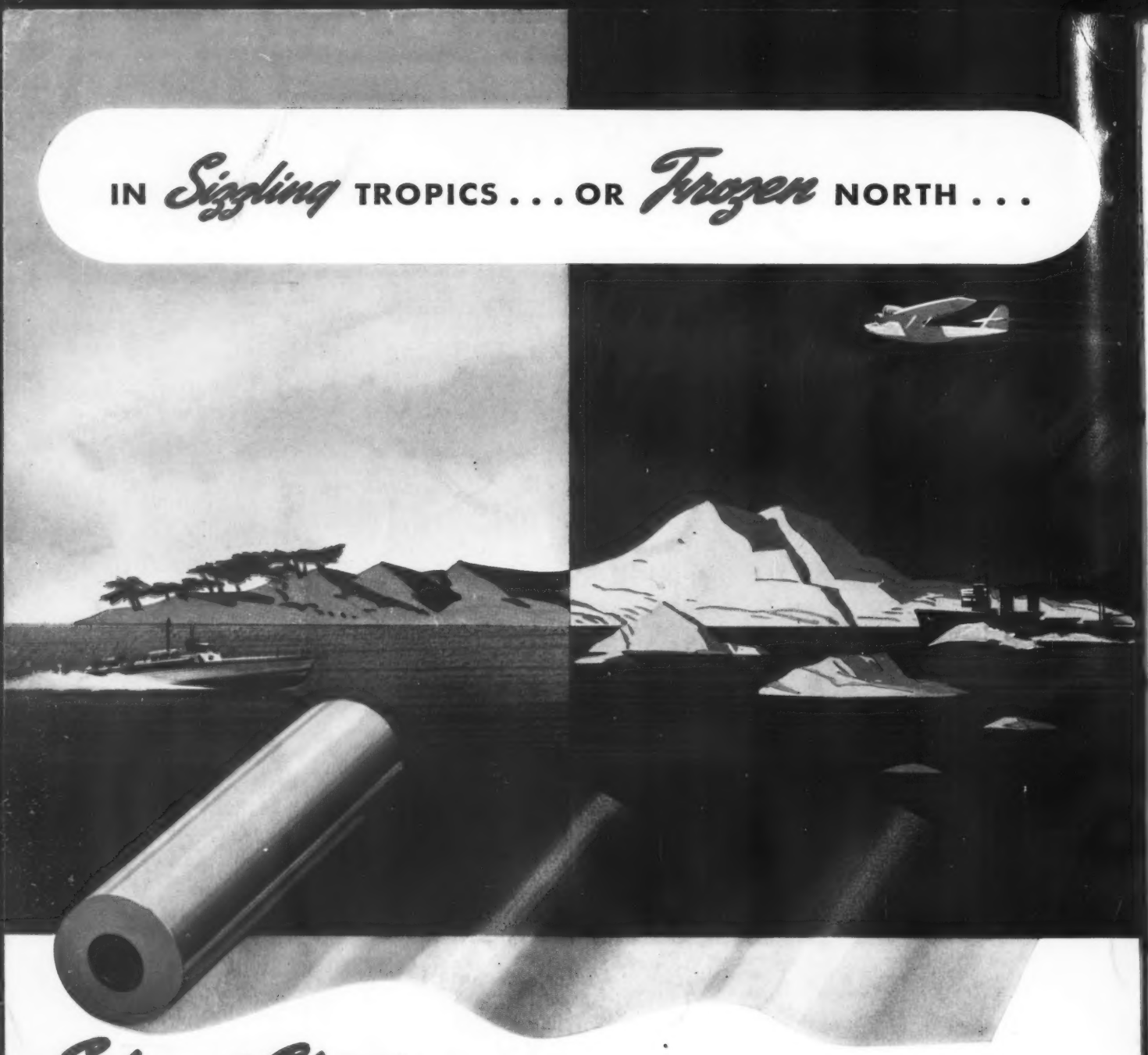
Many dried products and dehydrated foods are successfully packed in Michigan Cartons. Highly hygroscopic products are often first packed in hermetically sealed moisture-proof bags. Other foods are adequately protected in silicated, waxed or laminated cartons, securely sealed. Absolute protection necessitates cartons custom-built for the product.

CARTONS SAVE CRITICAL MATERIALS

Michigan Cartons are made from all standard boxboard finishes plus a variety of special coatings and laminations. Experts determine the board that gives your product the maximum in protection. One boxboard and carton source eliminates the possibility of divided responsibility and costly delays.

Considering a new food package? Then you'll want to draw upon the resources of a carton organization that specializes in food packaging. Complete research and marketing facilities plus years of practical experience have made Michigan Cartons the favorites of leading food merchandisers.

IN *Sizzling* TROPICS . . . OR *Frozen* NORTH . . .



Ethocel Sheeting ENLISTED FOR WAR DUTY!

It is literally true that whatever may be the temperature zone—that of the sizzling tropics or the frozen north—it makes no difference to ETHOCEL* Sheeting. This crystal-clear plastic, made by Dow from Ethylcellulose, the lightest and toughest cellulose material commercially available, has been put through its paces over and over again. It has been successfully tested under temperatures as low as 70° below and as high as 250° F. It stands up. That's why fabricators enlist it for war duty.

ETHOCEL Sheeting reveals its true character best where service requirements are unusually severe. It does not crack or warp—and it's tough. Consequently this easily fabricated plastic is much in demand for war jobs—regardless of temperature or humidity—and is thus replacing stategic metals urgently needed elsewhere. Write to the Plastics Sales Division for any information desired.

*Trade Mark Reg. U. S. Pat. Off.

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Los Angeles • Seattle

DOW

SPEAKING OF TOUGHNESS! This drawn box of ETHOCEL SHEETING (0.010") was loaded with 100 grams of B B lead shot, placed in a rotating drum—dropped 35 times a minute for two hours at 50° below Zero! No signs of weakening after 4200 impacts! That's toughness!